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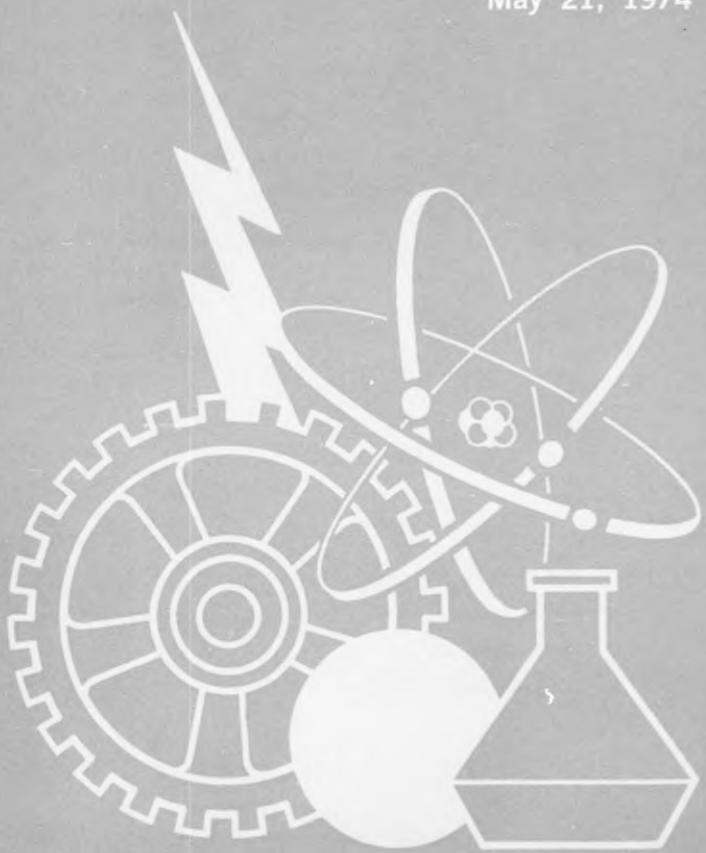

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 21, 1974 Volume 922 Number 3

CONTENTS

	Page
Patents and Trademark Notices	
Patent Suits	662
Patent Notices	
Certificates of Correction for the Week of May 21, 1974	664
Erratum	664
Adverse Decisions in Interferences	664
Patents Available for Licensing or Sale	664
National Technical Information Service	666
Condition of Patent Applications	669
Reissue Patents Granted (28,012)	670
Plant Patents Granted (3,551)	672
Patents Granted	
General and Mechanical (3,811,130)	673
Chemical (3,811,830)	854
Electrical (3,812,275)	940
Design Patents Granted (231,666)	1011
Index of Patentees	PI 1
Indices of Applicants of Reissues, Plants and Designs	PI 44
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 48
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 51

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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,700,000, Levi and Hughes, THERMIONIC CATHODE AND METHOD OF MANUFACTURING SAME, **filed** May 18, 1973, Ct. of Claims (District of Columbia), Doc. 22–72, *U.S. Philips Corporation* v. *The United States.* Order, defendant's motion for partial summary judgment granted and petition dismissed, Oct. 19, 1973.

2,990,004, R. F. Reifers, MOLDED PULP EGG CARTON; **3,028,065,** same, **filed** Sept. 12, 1969, D.C. Md. (Baltimore), Doc. 21200–W, *Diamond International Corporation* v. *Dolco Packaging Corp.* Consent order and decree, motion to amend its complaint hereby granted, Dolco permanently enjoined and restrained, plaintiff waives any claim for other relief in this case, Oct. 29, 1970.

3,028,065. (See 2,990,004.)

3,028,247, E. J. Molnar, DENTAL COMPOSITION AND PROCESS OF MAKING SAME, **filed** Oct. 31, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2543–F, *Coe Laboratories, Inc.* v. *Don D. Porteous, Michael Pellico and Denton Industries, Inc.*

3,239,661, Wince and Meyer, SURFACE-ATTACHED LUMINAIRE; **D. 201,093,** same, LIGHTING FIXTURE; **D. 214,943,** B. Zapolski, CLIP-ON FLASHLIGHT, **filed** June 19, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1514, *Progressive Dynamics* v. *Triangle Products.* Order, plaintiff's patent is invalid and not infringed, and judgment is entered in behalf of the defendant on the complaint, July 23, 1973.

3,251,418, E. L. Condra, OIL WELL SCRAPER, **filed** Sept. 8, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2142–RJK, *Midway Fishing Tool Company* v. *Industrial Concepts Corporation.* Filed summary judgment and order declaring Claim 12 of patent invalid and dismissing with prejudice plaintiff's claim of infringement entered Nov. 6, 1973.

3,420,064, Blass and Blass, IRRIGATION DRIPPER UNIT AND PIPE SYSTEM; **3,604,728,** same, DRIP LEVEL IRRIGATION, **filed** Oct. 17, 1972, D.C., S.D. Calif. (San Diego), Doc. 72–436–S, *Drip Irrigation Corporation of America* v. *Controlled Water Emission Systems.* Stipulated dismissal as to defendant's products with prejudice to bringing another action, defendant's counterclaim dismissed without prejudice, Nov. 6, 1973.

3,528,820, Schwall, Rogers and Corbin, PROCESS OF PREPARING A SELF-BASTING POULTRY PRODUCT; **3,563,763,** same, SELF-BASTING POULTRY PRODUCTS, **filed** July 31, 1972, D.C., W.D. Va. (Harrisonburg), Doc. 72–C–38–H, *Armour and Company* v. *Swift & Company.* Stipulation, complaint dismissed without prejudice, Nov. 1, 1973.

3,535,974, J. B. Habig, DOOR FOR A PIANO CASE HAVING ARRANGEMENT FOR TONAL ESCAPEMENT, **filed** Oct. 29, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73–C–521, *Kimball Piano and Organ Company* v. *Billy Lay, doing business as Bill Lay Music Company.*

3,696,625, J. M. Alexander, POST IMPLANTING METHOD AND VEHICULAR APPARATUS THEREFOR, **filed** Nov. 1, 1973, D.C., E.D. Tex. (Sherman), Doc. S–73–CA–72, *Stillwell-Gerard Construction Co.* v. *Reed Tool Company.*

3,563,763. (See 3,528,820.)

3,604,728. (See 3,420,064.)

3,750,882, G. W. Hays, AUTOMATIC GRADER, **filed** Nov. 1, 1973, D.C., S.D.N.Y., Doc. 73–C–4713, *Technical Development Corp.* v. *AMF Industries, Inc.*

D. 201,093. (See 3,239,661.)

D. 214,943. (See 3,239,661.)

3,008,520, Greenstadt and Ziers, DRAPERY APPARATUS, **filed** Mar. 16, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–574–CC, *Lightron Corporation* v. *John H. Higgins.* Consent judgment, defendant permanently enjoined from further infringing said patent, entered Apr. 2. 1973.

3,135,634, D. P. Moore, SOLID EXPLOSIVE COMPOSITION AND METHOD OF PREPARATION EMPLOYING VULCANIZED RUBBER AND A SOLID INORGANIC OXIDIZING SALT; **Re. 26,108,** same, **filed** Oct. 23, 1973, Ct. of Claims (District of Columbia), Doc. 393–73, *David Pelton Moore* v. *The United States.*

3,149,431, M. B. Blish, SELF-ALIGNING NECK CARD LABEL, **filed** Sept. 18, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2398, *Matthew B. Blish* v. *Pfizer, Inc.*

3,206,688, M. J. DiToro, APPARATUS FOR CORRECTING DISTORTION IN WAVE-SIGNAL TRANSLATING CHANNELS, **filed** Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c315, *General Signal Corp.* v. *Bell Telephone Lab.* Order cause transferred to the Eastern District of New York, Aug. 10, 1973.

3,230,675, Frommelt and Frommelt, DOCK PADS WITH ADJUSTABLE HEAT PAD; **3,403,489,** same, LOADING DOCK SHELTERS, **filed** July 31, 1969, D.C., N.D.N.Y. (Utica), Doc. 69–CV–265, *Dubuque Awning & Tent Company* v. *W. B. McGurie Co., Inc.* Stipulation and order of dismissal filed Nov. 5, 1973.

3,253,544, G. W. Von Hofe, MANUFACTURE AND USE OF LABELS FOR BOTTLES, CONTAINERS, AND THE LIKE; **3,536,550,** same, METHOD OF AND APPARATUS FOR PRINTING AND FEEDING LABELS IN A CONTINUOUS WEB, AND FOR VERIFYING AND CUTTING INDIVIDUAL LABELS THEREFROM FOR APPLICATION TO ARTICLES, **filed** Sept. 25, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2261–EC, *NJM, Inc.* v. *Avery Products Corporation.*

3,299,908, A. G. Petzetakis, HOLLOW REINFORCED SEAMLESS TUBULAR ARTICLE, **filed** May 30, 1973, D.C. (District of Columbia), Doc. 1054–73, *Bridgestone Tire Company of America, Inc. et al.* v. *Aristovoulos G. Petzetakis.*

3,309,459, D. S. Donigian, COLOR TELEVISION SERVICING INSTRUMENT, **filed** Aug. 31, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2261, *Donald S. Donigian* v. *Zenith Radio Corporation.*

3,317,149, W. C. Gooch, ELECTRICAL CABLE STRINGING APPARATUS, **filed** Sept. 28, 1973, D.C., W.D. La. (Shreveport), Doc. 19,427–S, *Gearhart-Owen Industries, Inc.* v. *Superior Iron Works and Supply Company, Inc.*

3,349,726, L. Fono, METHOD FOR PANCAKE PRODUCTION, **filed** July 9, 1973, D.C., M.D. Tenn. (Nashville), Doc. 6966, *Magic Pan, Inc.* v. *Tex Ritter's Chuckwagon System, Incorporated, Mark-Clark Bates, and Ronald Wallace.* Stipulated order, complaint dismissed, writ of injunction against defendants enjoining and restraining them from plaintiff's rights under said patent, July 9, 1973.

3,351,673, R. G. Gregg, COIFFURE PROTECTORS, **filed** June 12, 1972, D.C., N.D. Ala. (Birmingham), Doc. CA72–L–511–NE, *Richard Gregg Manufacturing Company* v. *Fairco Drug, Inc.* Judgment, patent valid and infringed by defendant; defendant permanently enjoined, Oct. 11, 1973.

3,382,280, C. W. Huffman, 3',4'-DICHLOROPROPIONANILIDE, **filed** May 14, 1968, D.C., C.D. Calif. (Los Angeles), Doc. 68–815–WPG, *Baldwin-Montrose Chemical Company, Incorporated* v. *Monsanto Company.* Decision and order, defendant's motion to dismiss granted. If Plaintiff does desire to present evidentiary proof that this is an "exceptional" case, a motion to reopen would be granted, Apr. 23, 1973.

3,403,489. (See 3,230,675.)

3,535,974, J. B. Habig, DOOR FOR A PIANO CASE HAVING ARRANGEMENT FOR TONAL ESCAPEMENT, **filed** Nov. 12, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73–F–103, *Kimball Piano & Organ Co.* v. *Maurice E. Whitman, doing business as Mr. Music.*

3,536,550. (See 3,253,544.)

3,539,002, K. G. Dahlberg, EGG CARTON LATCH, **filed** July

19, 1973, D.C., W.D.N.Y. (Buffalo), Doc. C-1973-367, *Thermo Trim, Inc. v. Mobil Oil Corporation.*

Re. 26,056, W. P. Hickman, COMBINATION WATER DAM AND GRAVEL STOP, **filed** Oct. 10, 1972, D.C., E.D. Mich. (Detroit), Doc. 39009, *W. P. Hickman Co., Inc. v. Pomar Bldg. Products (Inc.).*

Re. 26,108. (See 3,135,634.)

Re. 26,667. E. G. Sarbo, FOOT COVER AND METHOD OF MANUFACTURING THE SAME, **filed** Oct. 9, 1973, D.C., W.D.N.C. (Statesville), Doc. ST-C-73-24, *Wayne-Gossard Corporation v. Moretz Hosiery Mills, Inc.*

D. 223,022, J. M. Yates, VEHICULAR TANK FOR FUEL OR THE LIKE, **filed** Oct. 25, 1973, D.C., N.D. Tex. (Dallas), Doc. CA-3-7834-E, *Recreational Products Marketing Inc. and James M. Yates v. Norwin, Inc. and Frank A. Northway.*

Certificates of Correction for the Week of May 21, 1974

3,407,010	3,760,284	3,776,311	3,785,334
3,537,823	3,760,592	3,776,339	3,785,755
3,581,511	3,761,400	3,776,804	3,785,836
3,585,537	3,761,433	3,776,807	3,786,002
3,598,761	3,761,511	3,776,876	3,786,519
3,602,488	3,761,869	3,777,182	3,786,663
3,612,454	3,763,093	3,777,487	3,786,956
3,613,534	3,763,472	3,777,488	3,786,973
3,620,695	3,763,497	3,777,724	3,787,240
3,643,184	3,764,001	3,778,130	3,787,377
3,648,893	3,764,223	3,778,173	3,787,432
3,654,243	3,765,468	3,778,184	3,787,533
3,663,569	3,765,584	3,778,429	3,787,537
3,669,910	3,765,629	3,778,486	3,787,585
3,678,732	3,765,672	3,778,608	3,787,642
3,683,304	3,765,870	3,778,681	3,787,819
3,692,706	3,766,210	3,778,713	3,788,067
3,706,524	3,766,305	3,778,739	3,788,347
3,706,756	3,766,704	3,778,854	3,788,385
3,708,492	3,767,179	3,779,318	3,788,414
3,711,509	3,767,794	3,779,689	3,788,469
3,718,105	3,768,156	3,780,073	3,788,587
3,719,611	3,768,957	3,780,583	3,788,612
3,720,342	3,769,018	3,780,867	3,788,703
3,722,440	3,769,116	3,780,963	3,789,665
3,727,545	3,769,414	3,781,003	3,789,866
3,728,152	3,769,809	3,781,173	3,789,926
3,731,278	3,770,038	3,781,187	3,789,941
3,736,134	3,770,315	3,781,338	3,790,092
3,736,968	3,770,377	3,781,637	3,790,293
3,737,898	3,770,395	3,781,697	3,790,399
3,739,738	3,771,144	3,781,852	3,790,481
3,743,773	3,771,337	3,781,856	3,790,618
3,744,920	3,771,634	3,782,319	3,790,655
3,752,536	3,771,643	3,782,477	3,790,724
3,753,620	3,771,903	3,782,775	3,790,837
3,753,640	3,772,122	3,783,199	3,790,885
3,753,826	3,772,132	3,783,294	3,791,104
3,755,439	3,772,364	3,783,404	3,791,627
3,756,165	3,772,454	3,783,494	3,791,808
3,756,554	3,772,503	3,783,915	3,791,812
3,756,959	3,773,540	3,784,162	3,791,925
3,758,190	3,774,502	3,784,469	3,792,264
3,758,657	3,775,005	3,784,504	3,792,362
3,758,875	3,775,027	3,784,655	3,792,372
3,758,952	3,775,055	3,784,848	3,793,208
3,759,279	3,775,262	3,784,854	
3,759,683	3,775,614	3,785,149	
3,759,940	3,776,049	3,785,251	

Erratum

All reference to Patent Number 3,804,604 to Anthony J. Gunderman et al., Transparent Candle, appearing in the OFFICIAL GAZETTE of April 16, 1974, should be deleted as the application inadvertently issued.

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,401,804, E. A. Link, CRANE, Interference No. 96,837, decided May 12, 1971, claims 2, 3, 6 and 7.

Patent No. 3,445,891, J. Thordarson, APPARATUS FOR MANUFACTURING FILM FROM THERMOPLASTIC RESINOUS FILM-FORMING MATERIALS, Interference No. 97,697, decided Oct. 15, 1973, claims 1 and 5.

Patent No. 3,483,513, C. B. Burckhardt and R. J. Collier, HOLOGRAPHIC MATCHED FILTER PATTERN RECOGNITION TECHNIQUE, Interference No. 98,249, decided Dec. 4, 1973, claims 4, 5, 6, 15, 16, 17, 18 and 19.

Patent No. 3,492,071, G. Limnios and S. Jeffee, APPARATUS AND METHOD FOR PRINTING FROM PRE-PRINT FILM, Interference No. 98,424, decided Feb. 5, 1974, claims 1, 2, 6 and 7.

Patent No. 3,502,462, D. S. Dabkowski, P. J. Konkol, L. F. Porter and A. M. Rathbone, NICKEL, COBALT, CHROMIUM STEEL, Interference No. 97,931, decided Jan. 28, 1974, claim 1.

Patent No. 3,504,347, S. A. Harmon and E. A. Herrera, INTERRUPT MONITOR APPARATUS IN A COMPUTER SYSTEM, Interference No. 98,400, decided Feb. 11, 1974, claims 1, 3 and 7.

Patent No. 3,555,341, L. W. Curtis, REAR LOADING PANEL LAMP ASSEMBLY, Interference No. 97,849, decided Dec. 11, 1973, claims 1, 2, 3, 7 and 8.

Patent No. 3,560,498, D. E. Bublitz and R. H. Rigterink, TETRASUBSTITUTED PYRIDAZINES, Interference No. 98,006, decided Jan. 8, 1974, claims 5 and 7.

Patent No. 3,579,088, T. C. Fletcher, L. M. Silva and B. L. Wilkinson, FERRORESONANT TRANSFORMER WITH CONTROLLABLE FLUX, Interference No. 98,090, decided Feb. 12, 1974, claims 1, 3, 7, 8, 9, 11, 12, 13 and 17.

Patent No. 3,617,251, D. L. Hunter, W. G. Woods, J. D. Stone and C. W. Le Fevre, HERBICIDAL HALODINITRO-1,3-PHENYLENEDIAMINE COMPOUNDS, Interference No. 97,957, decided Jan. 9, 1974, claims 2, 8 and 10.

Patent No. 3,621,247, B. M. Lide, X-RAY TIRE INSPECTION APPARATUS, Interference No. 97,973, decided Feb. 14, 1974, claims 1, 4 and 5.

Patent No. 3,623,218, H. Mitarai, C. E. Nelson and A. P. Youmans, METHOD FOR DETERMINING DEPTH OF LAPPING OF DIELECTRICALLY ISOLATED INTEGRATED CIRCUITS, Interference No. 98,062, decided Dec. 4, 1973, claims 1, 2, 3, 4, 5, 6 and 7.

Patent No. 3,653,254, T. A. Simon, LEAK-TESTING INTERNAL SEALS IN PIPE JOINTS, Interference No. 98,115, decided Feb. 28, 1974, claims 1, 2 and 3.

Patents Available for Licensing or Sale

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,395,829. MEDICATION DISPENSING MEANS. David M. Cogdell, et al. Correspondence to Nathaniel A. Humphries, Suite 310, 1730 Rhode Island Ave. NW., Washington, D.C., 20036.

3,422,174. METHOD AND APPARATUS FOR PRODUCING HOLLOW PLASTIC ARTICLES. Norbert Hagan, Kuppenheim, Germany. Correspondence to: Michael S. Striker, 369 Lexington Ave., New York, N.Y., 10017.

3,608,241. WINDOW OPERATING DEVICE FOR AUTOMOBILES. Miguel Rodrigo-Mazure, Miami, Fla. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,729,751. PARAPLEGIC BED. Wayne V. Kirkman, 960 42nd St., West Palm Beach, Fla., 33407.

3,743,636. TRIALKYLSILYLOXIMO STEROIDS. VEB Jenapharm, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,755,818. APPARATUS FOR AUTOMATICALLY SYNCHRONIZING THE OPERATION OF A DEVICE TO CORRESPOND WITH ITS MOVEMENT ALONG A PREDETERMINED ROUTE. Myron Greenspan, 1230 Avenue Y, Brooklyn, N.Y., 11235.

3,757,357. LIQUID BODY WASTE DISPOSAL SYSTEM. E. Howard Smith, Rte. 1, Box 181-C, Mobile, Ala., 36605.

3,766,727. PANETIME CLOCK. Frank T. Didik, Directorate, USDESEA, APO, New York, 09164.

3,771,281. APPARATUS FOR TRANSPORTING DISCRETE COMMODITIES TO HIGH-SPEED CONSUMING MACHINES OR THE LIKE. Hauni-Werke, Hamburg, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,774,462. VALVE ACTUATOR. J. B. Thompson, 4901 Richmond Ave., Suite 225, Houston, Tex., 77027.

3,786,498. AUDIO-VISUAL WARNING SYSTEM. Gordon C. Lipe et al., P.O. Box 241, Skaneateles, N.Y., 13152.

3,789,431. CLOTHING HAVING ADJUSTABLE BELT LOOPS. Robert B. Rand, P.O. Box 1939, Daytona Beach, Fla., 32015.

3,791,734. MICROFILM CAMERA AND LIGHT SOURCE THEREFOR. George F. Dvorak, Chicago, Ill. Correspondence to: Balogh, Osann et al., 53 W. Jackson Blvd., Chicago, Ill., 60604.

3,792,883. VEHICLE LOCK PROTECTOR. Puro de Jesus Juarbe. Correspondence to: Irons, Sears & Santorelli, 1801 K St. NW., Washington, D.C., 20006.

3,795,072. FISHING REEL. Thomas D. Sherman, 711 Daisy Lane, Fox Point, Wis., 53217.

3,798,644. VECTOR VELOCITY SYSTEM. J. N. Constant, 1603 Danbury Drive, Claremont, Calif., 91711.

The following 2 patents are offered by Susan M. Peoples, 5201 Belleville Ave., Baltimore, Md., 21207.

D. 213,627. PORTABLE ONE WAY COIN OPERATED TELEPHONE FOR INSTITUTIONS AND HOSPITALS.

D. 217,156. PORTABLE TWO-WAY COIN OPERATED TELEPHONE.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 5 patents upon reasonable terms.

Application for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,610,772. BLADED ROTOR.

3,610,777. COMPOSITE DRUM ROTOR.

3,611,838. HYDRAULIC CONTROL FOR NON-SYNCHRONOUS SHIFTING HYDROMECHANICAL TRANSMISSION.

3,612,403. VARIABLE AREA DUCT.

3,616,125. AIRFOIL FACING.

RCA Corporation offers to grant non-exclusive licenses under the following 22 patents on reasonable terms and conditions.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,924. FREQUENCY SHIFT OSCILLATOR WHICH AVOIDS THE GENERATION OF TRANSIENTS.

Re. 27,928. GATED FLIP-FLOP EMPLOYING PLURAL TRANSISTORS AND PLURAL CAPACITORS COOPERATING TO MINIMIZE FLIP-FLOP RECOVERY TIME.

3,789,600. ELECTRONIC TIME MEASUREMENT.

3,790,245. DOUBLE-SIDED HOLOGRAPHIC REPLICAS.

3,790,267. OPTICAL SYSTEM FOR ORTHOGONALIZING IMAGE FIELD OF PROJECTION LENS.

3,790,701. SYSTEM FOR RECORDING AND PLAYING BACK COLOR ENCODED HOLOGRAMS.

3,790,845. FOCUS-GRILL CATHODE-RAY TUBE IMAGE REPRODUCER MODULATION WITH GRILL VOLTAGE.

3,790,853. SEMICONDUCTOR LIGHT RAY DEFLECTOR.

3,790,897. DIFFERENTIAL AMPLIFIER AND BIAS CIRCUIT.

3,791,024. FABRICATION OF MONOLITHIC INTEGRATED CIRCUITS.

3,791,546. CATHODE-RAY TUBE HAVING CONDUCTIVE INTERNAL COATING COMPRISED OF IRON OXIDE AND GRAPHITE.

3,792,359. HIGH FREQUENCY AUTOMATIC GAIN CONTROL CIRCUITS.

3,792,372. MEANS FOR ENSURING STARTING OF GAS LASER.

3,792,385. COAXIAL MAGNETIC SLUG TUNER.

3,792,915. NOVEL LIQUID CRYSTAL ELECTRO-OPTIC DEVICES.

3,793,489. ULTRADIRECTIONAL MICROPHONE.

3,793,539. CIRCUIT FOR OPERATING AN AVALANCHE DIODE IN THE ANOMALOUS MODE.

3,793,594. WIDE BAND PHASE-COHERENT SELF-CALIBRATING TRANSLATION LOOP.

3,793,717. METHOD OF CONTROLLING RESISTANCE VALUES OF THICK-FILM RESISTORS.

3,794,754. PAL-TYPE COLOR SIGNAL PROCESSING APPARATUS.

3,794,854. SIGNAL SENSING AND STORAGE CIRCUIT.

3,794,877. JITTER IMMUNE TRANSISTORIZED VERTICAL DEFLECTION CIRCUIT.

General Electric Company is prepared to grant non-exclusive licenses under the following 59 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent may be addressed to the Patent Counsel Telecomm. Products Dept., General Electric Co., Lynchburg, Va., 24502.

3,671,884. IMPROVED AMPLIFYING CIRCUIT.

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,740,584. HIGH ARRANGEMENT FREQUENCY SCR GATING.

Applications for licenses under the following 3 patents may be addressed to: Patent Counsel, Gas Turbine Products Division, 1 River Road, Building No. 500, 2nd Floor, Schenectady, N.Y., 12345.

3,777,484. SHROUDED COMBUSTION LINER.

3,777,983. GAS COOLED DUAL FUEL AIR ATOMIZED FUEL NOZZLE.

3,785,146. SELF-COMPENSATING FLOW DIVIDER FOR A GAS TURBINE STEAM INJECTION SYSTEM.

Applications for licenses under the following 19 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

2,802,921. CONTROL FOR ELECTRICALLY HEATED APPLIANCES.

2,806,107. ADJUSTABLE THERMOSTAT FOR COOKING APPLIANCE OR THE LIKE.

2,818,487. ADJUSTABLE CONTROL FOR AUTOMATIC ELECTRIC COFFEEMAKER OR THE LIKE.

2,930,874. ADJUSTABLE TEMPERATURE RESPONSIVE CONTROL FOR ELECTRICAL DEVICES.

2,954,451. ELECTRICAL SWITCH MECHANISM FOR TOASTER OR THE LIKE.

2,959,668. JEWEL AND NEON INDICATOR LAMP MOUNTING.

2,987,607. AUTOMATICALLY CONTROLLED ELECTRIC KETTLE.

3,270,911. COFFEEMAKER LID RETAINING MEANS.

3,283,128. ELECTRIC TOASTER HEATING UNIT.

3,335,262. ELECTRIC WARMING TRAY.

3,348,024. TOAST TEMPERATURE DETECTOR.

3,363,089. ELECTRIC TOASTER WITH HEATER TENSIONING MEANS.

3,364,844. FOOD STEAMER WITH MULTI-LEVEL FOOD SUPPORTING MEANS.

3,365,071. RACK FOR SUPPORTING FOOD CONTAINERS AT SPACED LEVELS WITHIN A COOKING VESSEL.

3,550,804. ELECTRIC TOASTER CASING CONSTRUCTION.

3,497,976. STEAM IRON WATER VALVE WICK STRUCTURE.

3,624,937. IRON WITH CLEANABLE SPRAYER.

3,685,569. METHOD FOR GRAVITY PRESSURE PERMANENT MOLDING.

3,739,148. FOOD WARMING DISH.

Applications for licenses under the following 19 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,320,778. WASHING MACHINE HAVING MULTIPLE ELECTIVE CYCLES.

3,509,740. COVER FOR WASHING MACHINE TUB.

3,543,542. SELF-CLEANING FILTER.

3,605,455. WATER ADMISSION MEANS.

3,724,889. LATCHING DEVICE.

3,736,773. ADDITIVE DISPENSER FOR AUTOMATIC WASHING MACHINE.

3,742,175. INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF FOOD IN INDUCTIVELY HEATED VESSEL WITH IMMERSION-TYPE TEMPERATURE SENSING MEANS

3,742,179. INDUCTION COOKING APPLIANCE INCLUDING WIRELESS TRANSMISSION OF TEMPERATURE DATA.

3,765,268. BELT MECHANISM.

3,771,725. WASHING APPLIANCE HAVING AN IMPROVED SPRAY ARM ASSEMBLY.

3,774,408. TWO-TEMPERATURE REFRIGERATOR INCLUDING MOISTURE CONTROL MEANS.

3,778,798. FOOD PREPARATION ELECTRIC THERMOMETER ALARM CIRCUIT.

3,779,624. CABINET HAVING A KICK PLATE ASSEMBLY.

3,781,757. GROUNDING CLIP FOR PLUG-IN SURFACE HEATING UNIT.

3,783,853. TEXTURED CONTINUOUS CLEANING SURFACE FOR COOKING OVENS.

3,783,854. FLOW-THROUGH SELF-CLEANING GAS OVEN WITH HEAT EXCHANGER.

3,785,168. HOUSEHOLD REFRIGERATOR.

3,787,674. LIGHTED CONTROL CONSOLE WITH LIFE-UP INFORMATION PLATE.

3,788,212. REFUSE COMPACTOR HAVING A PIVOTALLY ARRANGED RAM FACE MEMBER.

Applications for licenses under the following 16 patents may be addressed to: Patent Counsel, Contractor Equipment Business Division, General Electric Company, 1285 Boston Ave., Building 23–EE, Bridgeport, Conn., 06602.

3,660,158. THIN FILM NICKEL TEMPERATURE SENSOR AND METHOD OF FORMING.

3,672,235. FLUIDIC AXIS POSITION SENSOR FOR ROTATING MASS.

3,702,963. A 2-TRANSISTOR SATURATING CORE HIGH-VOLTAGE INVERTER.

3,702,983. BACK WIRED MOUNTING SYSTEM FOR STATIC CONTROL.

3,710,814. BOURDON TUBE FLUIDIC TRANSDUCER.

3,714,452. CIRCUIT BREAKER MONITOR FOR UNINTERRUPTIBLE POWER SYSTEMS INCLUDING A STATIC BYPASS.

3,721,832. TIME DELAY AFTER DE-ENERGIZATION CIRCUIT.

3,724,478. TURN-UP VORTEX VALVE.

3,728,606. SOLID STATE HOSPITAL BED POWER CONTROL UNIT.

3,728,609. ELECTRIC POWER APPARATUS COMPRISING CONVERTER, LC FILTER, AND VOLTAGE REGULATOR ARRANGED FOR HIGHLY ACCURATE AND STABLE RESPONSES.

3,740,587. SOLID STATE UNIPOLE RELAY.

3,748,174. THIN FILM NICKEL TEMPERATURE SENSOR.

3,763,534. FABRICATION PROCESS FOR POROUS METAL BEARINGS.

3,768,122. CLOSED LOOP CARDING MACHINE CONTROL.

3,769,475. PNEUMATIC BREAK DETECTOR SENSOR.

3,778,769. SOLID STATE TOUCH CONTROL HAND SET CIRCUIT.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent-application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,754,141. Shipping and Storage Container for High Power Density Radioactive Materials. Filed July 12, 1973. Patented Aug. 21, 1973. Not available NTIS.

Patent 3,760,225. High Current Plasma Source. Filed June 6, 1972. Patented Sept. 18, 1973. Not available NTIS.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent 3,424,578. Method of Producing Permanent Magnets of Rare Earth Metals Containing Co., or Mixtures of Co, Fe and Mn. Filed June 5, 1967. Patented Jan. 28, 1969. Not available NTIS.

Patent 3,706,608. Combustion Tailoring of Solid Propellants by Oxidizer Encasement. Filed Mar. 24, 1970. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,709,748. Ionic Interhalogen Oxidizing Agent and Method. Filed May 26, 1970. Patented Jan. 9, 1973. Not available NTIS.

Patent 3,712,142. Magnetic and Pressure Transducer. Filed Nov. 17, 1971. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,713,044. N2 Pumped Tunable Dye Laser. Filed May 17, 1972. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,714,404. Birefringent Optical Correlator. Filed Mar. 11, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,714,561. Transducer for Measuring the Displacement of an Electrically Conductive Objective. Filed Nov. 24, 1970. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,715,759. Unfurlable Isotropic Antenna. Filed Mar. 8, 1970. Patented Feb. 6, 1973. Not available NTIS.

Patent 3,716,410. Lithium Battery Electrolyte Additive and Method of Improving Discharge Rate. Filed Sept. 27, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,717,628. Method for the Preparation of 2,3-Dimethyl Aziridine. Filed Oct. 9, 1970. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,718,398. Method of Aligning Laser Beam by Rotation. Filed Apr. 29, 1971. Patented Feb. 27, 1973. Not available NTIS.

Patent 3,722,039. Plastic Zipper/Closure for Flexible Containers. Filed Feb. 9, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,722,875. Adjustable Suspension Unit. Filed Apr. 29, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,722,969. Ball and Roller Bearing Retainer Improvement for High Speed Operation. Filed Jan. 4, 1972. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,725,282. Passive Wake Quenching System Using Nonablating Material, Sulfur and a Solid Noble Gas Fluoride. Filed Apr. 15, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,737. Corona Discharge Electrode Structure for Electrofluid Dynamic Generator. Filed Nov. 8, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,798. Proton Maser Antenna Tuning Means. Filed Sept. 3, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,814. Apparatus for Locking the Frequency of a Laser to an Atomic Absorption Line. Filed Sept. 10, 1971. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,815. Photoelastic Mode-Locking of Q-Switched Lasers Using Birefringent Crystals. Filed Jan. 10, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,816. Fan Geometry Mixing Laser. Filed Apr. 28, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,827. High Coupling Low Diffraction Acoustic Surface Wave Delay Line. Filed May 17, 1972. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,725,913. Microwave Sensitivity Time Control Circuit. Filed Nov. 22, 1971. Patented Apr. 3, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt. Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 395,025. Method of Chemically Inducing Lightwood Formation in Pine Trees. Filed Sept. 7, 1973. PC $4/MF $1.45.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent 2,983,810. Photoflash Unit. Filed May 12, 1958. Patented May 9, 1961. Not available NTIS.

Patent 2,991,421. Fish Guidance Direct Current Switching Devices. Filed Nov. 19, 1959. Patented July 4, 1961. Not available NTIS.

Patent 3,028,183. Sealed Ball Joint for Electrodes. Filed Nov. 30, 1959. Patented Apr. 3, 1962. Not available NTIS.

Patent 3,054,295. Method and Apparatus for Determining Rate of Pressure Change. Filed June 26, 1958. Patented Sept. 18, 1962. Not available NTIS.

Patent 3,069,907. Magnetic Type Current Meter. Filed July 22, 1960. Patented Dec. 25, 1962. Not available NTIS.

Patent 3,075,900. Method for Separating Molybdenum From Tungsten by Electrolysis From a Fused Electrolyte Bath. Filed Nov. 25, 1960. Patented Jan. 29, 1963. Not available NTIS.

Patent 3,078,997. Flotation Process for Concentration of Phenacite and Bertrandite. Filed Feb. 24, 1961. Patented Feb. 26, 1963. Not available NTIS.

Patent 3,103,202. Method of Treating Oyster Shells and Other Collectors to Diminish Predation. Filed May 31, 1962. Patented Sept. 10, 1963. Not available NTIS.

Patent 3,104,928. Bathkymograph. Filed Mar. 29, 1962. Patented Sept. 24, 1963. Not available NTIS.

Patent 3,305,567. Nitrated Fatty Acid Esters. Filed July 22, 1963. Patented Feb. 21, 1967. Not available NTIS.

Patent 3,321,009. High Temperature Heat Exchange Using Liquid Metal. Filed June 1, 1965. Patented May 23, 1967. Not available NTIS.

Patent 3,323,653. Multimembrane Apparatus for Demineralizing Liquids. Filed Mar. 20, 1963. Patented June 6, 1967. Not available NTIS.

Patent 3,323,857. Selective Extraction and Separation of Lanthanides With a Quaternary Ammonium Compound. Filed Dec. 16, 1965. Patented June 6, 1967. Not available NTIS.

Patent 3,329,265. Flotation of Mica. Filed Aug. 18, 1964. Patented July 4, 1967. Not available NTIS.

Patent 3,337,889. Mechanical Device for Cleaning the Interior of Large Aquarium Tanks. Filed Mar. 11, 1966. Patented Aug. 29, 1967. Not available NTIS.

Patent 3,385,669. Method of Preparing Zirconium Carbide Fibers and the Product Thereof. Filed Apr. 21, 1965. Patented May 28, 1968. Not available NTIS.

Patent 3,390,985. Consolidation and Forming by High-Energy-Rate Extrusion of Powder Material. Filed Aug. 10, 1966. Patented July 2, 1968. Not available NTIS.

Patent 3,450,267. Porous Membrane Support. Filed Aug. 28, 1967. Patented June 17, 1969. Not available NTIS.

Patent 3,463,814. Chemical Cycle for Evaporative Water Desalination Plant. Filed Mar. 24, 1967. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,463,981. On-Off Servo Control for a Fluid Level Sensor Including a Differential Transformer Pickoff With Limit Override. Filed Nov. 25, 1966. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,464,502. Hydraulic-Drive Drilling. Filed Nov. 6, 1967. Patented Sept. 2, 1969. Not available NTIS.

Patent 3,464,766. Stereo-Image Alternator System. Filed Oct. 28, 1966. Patented Sept. 2, 1969. Not available NTIS.

Patent 3,466,189. Method for Improving Heat Transfer in Condensers. Filed Sept. 2, 1966. Patented Sept. 9, 1969. Not available NTIS.

Patent 3,476,654. Multistage Flash Distillation With Scale Removal. Filed Sept. 29, 1967. Patented Nov. 4, 1969. Not available NTIS.

Patent 3,477,942. Hydrocarbon Fuels From Coal or Any Carbonaceous Material. Filed July 28, 1967. Patented Nov. 11, 1969. Not available NTIS.

Patent 3,479,266. Inorganic Ion Exchange Membranes for Use in Electrical Separatory Processes. Filed Nov. 30, 1967. Patented Nov. 18, 1969. Not available NTIS.

Patent 3,479,267. Inorganic Ion Exchange Membranes for Use in Electrical Separatory Processes. Filed Nov. 30, 1967. Patented Nov. 18, 1969. Not available NTIS.

Patent 3,479,638. Beamforming in Seismic Surveying. Filed July 29, 1968. Patented Nov. 18, 1969. Not available NTIS.

Patent 3,482,635. Polyacrylamide Removal From Porous Media. Filed Mar. 6, 1967. Patented Dec. 9, 1969. Not available NTIS.

Patent 3,483,649. Electrical Trawl Net System. Filed Oct. 29, 1968. Patented Dec. 16, 1969. Not available NTIS.

Patent 3,518,448. Intermittent Timer Circuit. Filed Feb. 13, 1969. Patented June 30, 1970. Not available NTIS.

Patent 3,551,209. Formation of Skeletal Metal Solid Electrolyte Fuel Cell Electrodes. Filed May 21, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,553,501. Ultrasonic Piezoelectric Transducer Cartridge. Filed Feb. 16, 1968. Patented Jan. 5, 1971. Not available NTIS.

Patent 3,968,869. Preparation of Maps. Filed Nov. 30, 1956. Patented Jan. 24, 1961. Not available NTIS.

Patent 3,974,184. Bundle Conductor Spacer. Filed Aug. 19, 1958. Patented Mar. 7, 1961. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP-2. Washington, D.C. 20546

Patent 3,780,151. Evacuated Displacement Compression Molding. Patented Dec. 18, 1973. Not available NTIS.

[FR Doc. 74-9687; Filed 4-30-74; 8:45 am]

DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent application 338,728. Improved Air Generating Mechanism for an Aircraft Air Cushion Takeoff and Landing System. Filed Mar. 7, 1973. PC $5/MF $1.45.

Patent 3,747,558. Cross-Mounted Mask Changer With Thickness Monitoring. Filed Nov. 3, 1972. Patented July 24, 1973. Not available NTIS.

Patent 3,747,875. V/Stol Aircraft-by-Pass Engine Having a Double, Thrust Diverter Valve Assembly. Filed Nov. 4, 1971. Patented July 24, 1973. Not available NTIS.

Patent 3,748,892. High Precision Dilatometer. Filed Apr. 18, 1972. Patented July 31, 1973. Not available NTIS.

Patent 3,749,022. Two-Stage Arming Mechanism. Filed Oct. 14, 1971. Patented July 31, 1973. Not available NTIS.

Patent 3,749,914. Vehicle Attitude Sensor. Filed Dec. 21, 1970. Patented July 31, 1973. Not available NTIS.

Patent 3,749,963. Device to Aid in Centering of High Energy Electric Particle Beams in an Evacuated Drift Tube. Filed May 19, 1970. Patented July 31, 1973. Not available NTIS.

Patent 3,750,013. Microstrip Plasma Probe. Filed Oct. 21, 1970. Patented July 31, 1973. Not available NTIS.

Patent 3,750,048. Window for High Power Gaseous Lasers. Filed May 17, 1972. Patented July 31, 1973. Not available NTIS.

Patent 3,750,182. Suppressed Sidelobe Equal Beamwidth Millimeter Horn Antenna. Filed Aug. 8, 1972. Patented July 31, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 272,812. Novel Process for the Preparation of Tris (Hydroxymethyl) Phospine and Tris (Hydroxymethyl) Phosphine Oxide. Filed July 18, 1972. PC $4/MF $1.45.

Patent application 288,813. N,N-Bis(2-(3-Carboalkoxypropionyloxy)Ethyl)-Oleamides. Filed Sept. 13, 1972. PC $5/MF $1.45.

Patent application 293,748. Electrostatic Yarn Bulking. Filed Sept. 29, 1972. PC $4/MF $1.45.

Patent application 295,778. Process for Improving Abrasion Resistance of Resilient Fabrics. Filed Oct. 6, 1972. PC $4/MF $1.45.

Patent application 311,611. Dry-Structured Foams From Animal Hide Glues. Filed Dec. 4, 1972. PC $4/MF $1.45.

Patent application 348,801. N-Substituted Fatty Acid Amide Lubricants. Filed Apr. 6, 1973. PC $4.25/MF $1.45.

Patent application 376,973. Chicken Coop Unstacking Machine. Filed July 6, 1973. PC $4/MF $1.45.

Patent application 382,793. Pyrolyzed Tall Oil Products as Synthetic Rubber Tackifiers. Filed July 26, 1973. PC $4/MF $1.45.

Patent 3,676,207. Permanent Sizing of Yarns and Fibers With Durable Polymers and Copolymers for the Production of Fabrics With Improved Properties for Particular End Uses. Filed July 15, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,707,024. Method for Electrostatically Bulking and Impregnating Staple Yarns. Filed Mar. 31, 1971. Patented Dec. 26, 1972. Not available NTIS.

Patent 3,725,001. Phosphinidynetrimethanol Triacetate and its Application to Cellulosic Materials. Filed Aug. 21, 1970. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,733,257. Radiation Initiated Process for the Graft Copolymerization of Binary Monomer Mixtures and Cellulose. Filed Nov. 19, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,746,644. N-Substituted Fatty Acid Amide Lubricants. Filed Aug. 31, 1971. Patented July 17, 1973. Not available NTIS.

Patent application 288,840. N-Benzyl-N-2-Acetoxyethyl-Oleamide. Filed Sept. 13, 1972. PC $5/MF $1.45.

Patent application 292,730.Electrostatic Yarn Bulking. Filed Sept. 29, 1972. PC $4/MF $1.45.

Patent application 306,771. Process for Reacting Sultones With Cellulosic Materials to Produce Cellulosic Materials Having Both Basic and Acidic Groups. Filed Nov. 15, 1972. PC $4/MF $1.45.

Patent application 306,772. Production of Phosphorus and Nitrogen Containing Compounds and Polymers and Flameproofing Organic Textiles. Filed Nov. 15, 1972. PC $4/MF $1.45.

Patent application 315,731. Process for Increasing Receptivity to Fluorescent Whitening Agents in Resin-Treated Cellulosic Textiles. Filed Dec. 15, 1972. PC $4/MF $1.45.

Patent application 315,753. Flame-Resistant Organic Textiles Through Treatment With Halogen Containing Soluble Methylol Phosphine Adducts. Filed Dec. 15, 1972. PC $4/MF $1.45.

Patent application 321,417. Removal of Free Formaldehyde From Solutions of Methylolated Carbamate Finishing Agents and Textiles Treated Therewith. Filed Jan. 5, 1973. PC $4/MF $1.45.

Patent application 328,205. Flame Retardant Polymers Made From Hydroxymethylphosphorus Compounds and Guanazoles and Process for Treating Organic Textiles. Filed Jan. 31, 1973. PC $4.50/MF $1.45.

Patent application 335,861. Preparation of Cellulose N,N-Dimethylformimidate Chloride in Textile Form, and Conversion to Halogenodeoxycelluloses and Cellulose Formate. Filed Feb. 26, 1973. PC $4.25/MF $1.45.

Patent application 376,971. Quaternary Arylaminoalkyl Phosphonium Salts and Process for the Preparation Thereof. Filed July 6, 1973. PC $4/MF $1.45.

Patent 3,732,256. Reduced Maleopimaric Acid and Process for its Preparation. Filed Mar. 26, 1971. Patented May 8, 1973. Not available NTIS.

Patent 3,745,835. Air Static Pressure and Temperature Measuring Device for Remote Locations in Stored Porous Material. Filed Nov. 1, 1971. Patented July 17, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health
Chief, Patent Branch, Westwood Building
Bethesda, Md. 20014

Patent 3,784,467. Droplet Countercurrent Chromatography. Filed May 26, 1971. Patented Jan. 8, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent 2,799,574. Electric Smelting Process for Manganese Ores. Filed Feb. 10, 1953. Patented July 16, 1957. Not available NTIS.

Patent 2,808,886. Selective Plugging of Gas-Injection Oil Wells in Oil Field Gas-Drive Projects. Filed July 8, 1953. Patented Oct. 8, 1957. Not available NTIS.

Patent 2,812,288. Destructive Distillation of Hydrocarbonaceous Materials. Filed Oct. 11, 1950. Patented Nov. 5, 1957. Not available NTIS.

Patent 2,817,885. Means for Orienting Diamonds in Hard Vector Directions in Diamond Bits and Tools. Filed Nov. 10, 1953. Patented Dec. 31, 1957. Not available NTIS.

Patent 2,867,478. Pulsating Counter-Flow Feeder. Filed June 9, 1958. Patented Jan. 6, 1959. Not available NTIS.

Patent 2,882,328. Controller for Regulating the Resistance of a Melt. Filed Nov. 12, 1957. Patented Apr. 14, 1959. Not available NTIS.

Patent 2,907,204. Improved Vane-Type Soil Testing Apparatus. Filed July 23, 1956. Patented Oct. 6, 1959. Not available NTIS.

Patent 2,960,771. Exaggeration Profile Plotter. Filed Apr. 14, 1958. Patented Nov. 22, 1960. Not available NTIS.

Patent 3,008,802. Recrystallizing a Reconstituted Fluorine-Mica Sheet. Filed Mar. 18, 1957. Patented Nov. 14, 1961. Not available NTIS.

Patent 3,022,842. Automatic Batch Weighing Device for Filling or Unloading. Filed Dec. 19, 1958. Patented Feb. 27, 1962. Not available NTIS.

Patent 3,027,750. Apparatus for Studying Phase Relationships of Gases and Gas Mixtures. Filed Feb. 24, 1959. Patented Apr. 3, 1962. Not available NTIS.

Patent 3,073,387. Method for Removal of Liquid and Solid Materials From Gas-Well Bores. Filed Oct. 22, 1959. Patented Jan. 15, 1963. Not available NTIS.

Patent 3,109,872. Cooler and Humidifier for Subsoil Centrifuge. Filed Aug. 29, 1961. Patented Nov. 5, 1963. Not available NTIS.

Patent 3,117,000. Activation of Inert or Passive Metals. Filed Mar. 15, 1962. Patented Jan. 7, 1964. Not available NTIS.

Patent 3,126,327. Electrolytic Method for Extracting the Chromium Values From Chromium Oxide Bearing Ores. Filed Dec. 4, 1962. Patented Mar. 24, 1964. Not available NTIS.

Patent 3,136,060. Device Isopachometer. Filed Mar. 6, 1961. Patented June 9, 1964. Not available NTIS.

Patent 3,136,627. Process and Apparatus for Selective Condensation of Metals. Filed June 11, 1959. Patented June 9, 1964. Not available NTIS.

Patent 3,137,080. Vitavue Relief Model Technique. Filed Mar. 16, 1962. Patented June 16, 1964. Not available NTIS.

Patent 3,140,170. Magnesium Reduction of Titanium Oxides in a Hydrogen Atmosphere. Filed Nov. 23, 1962. Patented July 7, 1964. Not available NTIS.

Patent 3,149,906. Prevention of Embrittlement of Metals. Filed Jan. 31, 1963. Patented Sept. 15, 1964. Not available NTIS.

Patent 3,174,857. Edge Isolation of Photographic Imagery. Filed June 25, 1962. Patented Mar. 23, 1965. Not available NTIS.

Patent 3,185,564. Method of Agglomerating Iron Ore Fines. Filed Apr. 24, 1964. Patented May 25, 1965. Not available NTIS.

Patent 3,192,912. Process for Separating the Rare Earth Elements by Means of Solvent Extraction. Filed Aug. 9, 1962. Patented June 29, 1965. Not available NTIS.

Patent 3,204,605. Live Fish Grading Apparatus. Filed July 29, 1964. Patented Sept. 7, 1965. Not available NTIS.

Patent 3,219,521. Method for Controlling Petromyzon Marinus. Filed Apr. 11, 1957. Patented Nov. 23, 1965. Not available NTIS.

Patent 3,221,906. Sealing System for Blast Furnace Bells for High Pressure Top Operation. Filed Feb. 11, 1964. Patented Dec. 7, 1965. Not available NTIS.

Patent 3,277,615. Air-Inflated Building Structure. Filed Apr. 14, 1964. Patented Oct. 11, 1966. Not available NTIS.

Patent 3,287,920. Device for Securing a Plug in an Infusion Hole. Filed Dec. 20, 1961. Patented Nov. 29, 1966. Not available NTIS.

Patent 3,302,701. Turbulence Promoter for Increased Heat and Mass Transfer. Filed Oct. 19, 1965. Patented Feb. 7, 1967. Not available NTIS.

Patent 3,463,922. Mineral Ore Exploration Apparatus Utilizing Neutron Activation. Filed July 29, 1966. Patented Aug. 26, 1969. Not available NTIS.

Patent 3,482,637. Process and Method for Quenching Incipient Gas-Air Explosions. Filed Oct. 20, 1967. Patented Dec. 9, 1969. Not available NTIS.

Patent 3,791,934. Helical Multistage Flash Distillation Unit. Filed Aug. 9, 1971. Patented Feb. 12, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2. Washington, D.C. 20546

Patent application 419,748. Strain Arrestor Plate. Filed Nov. 28, 1973. PC $3/MF $1.45.

Patent application 428,992. Particulate and Solar Radiation Stable Coating for Spacecraft. Filed Dec. 27, 1973. PC $3/MF $1.45.

Patent application 437,556. Transparent Fire Resistant Polymeric Structures. Filed Jan. 29, 1974. PC $3.50/MF $1.45.

Patent 3,732,397. Inherent Redundacy Electric Heater. Patented May 8, 1973. Not available NTIS.

Patent 3,780,563. Insitu Transfer Standard for Ultrahigh Vacuum Gage Calibration. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,933. Modification of One Man Life Raft. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,205. Temperature Compensated Digital Inertial Sensor. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,698. Heater-Mixer for Stored Fluids. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,699. Bimetallic Fluid Displacement Apparatus. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,782,835. Optical Instruments. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,250. Adaptive Voting Computer System. Patented Jan. 1, 1974. Not available NTIS.

[FR Doc. 74–9880; Filed 4–30–74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 13, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-07-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-23-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Fore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-24-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-04-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-05-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	9-05-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	11-06-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	2-23-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-04-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-27-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-27-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-17-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-02-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—Director (Vacant). Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-07-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—Director (Vacant). Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-22-73

Expiration of patents: The patents within the range of numbers indicated below expire during April 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

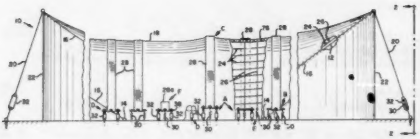
Patents	Numbers 2,787,000 to 2,790,970, inclusive
Plant Patents	Numbers 1,586 to 1,597, inclusive

REISSUES

MAY 21, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,012
DAMPING MEANS FOR PORTABLE STRUCTURE
Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co.
Original No. 3,465,764, dated Sept. 9, 1969, Ser. No. 654,425, July 19, 1967. Application for reissue Feb. 26, 1971, Ser. No. 118,713
Int. Cl. E04b *1/347*
U.S. Cl. 135—1 R 6 Claims

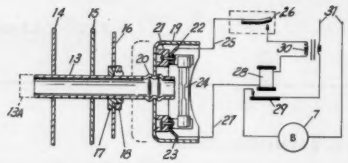


A [portable semi-rigid] *tent-like* structure including a pair of arches inclined from a common base and pivotably tilted outward from each other, a flexible membrane attached to and stretched between the arches, longitudinal tension members secured to the arches to support the membrane, inverted tension members operatively connected to the longitudinal tension members and/or to the membrane to prevent ballooning thereof, and [vibration damping means including at least one of the following: (A) spring-loaded dash-pots connected between the inverted tension members and the base; (B) springs connected between the inverted tension members and the base; (C) bands connected between the base an the membrane in series with spring-loaded dash-pots; and (D) bands connected between the base and the membrane in series with springs] *means for damping flutter and vibration in the structure. The damping means may include a spring or springs and/or a spring-loaded dash-pot or dash-pots associated with the membrane and/or the tension members and the base in any of several ways.*

The membrane may also be lined with a thicker layer of interstitial material which may also bond the tension members together and to the membrane.

28,013
SAFETY SWITCH AND CIRCUIT FOR OIL-BURNING FURNACE
Gordon McLarty, P.O. Box 55, Augusta, Mich. 49012
Original No. 3,645,662, dated Feb. 29, 1972, Ser. No. 14,081, Feb. 25, 1970. Application for reissue June 26, 1972, Ser. No. 266,192
Int. Cl. F23h *5/24*
U.S. Cl. 431—22 10 Claims

Oil burning furnace designed to normally operate as subatmospheric pressure in the combustion chamber has an open tube opening from the combustion chamber to the exterior of the furnace adjacent the burner. A normally closed heat responsive fuse or switch is mounted adjacent the outer end of the tube, to be responsive to abnormal back-flow of hot combustion gases from the furnace. The fuse or switch is connected in controlling relation to the power circuit of the burner, to shut off the burner if abnormal back pressure develops in the combustion chamber. The switch and tube are adjustable to vary the degree of sensitivity of system to back pressure.



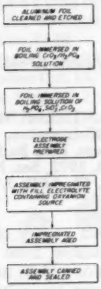
28,014
METHOD FOR DRY CLEANING
Herman Knieriem, Jr., Ballwin, Mo., assignor to The Dow Chemical Co., Midland, Mich.
No Drawing. Original No. 3,482,928, dated Dec. 9, 1969, Ser. No. 680,054, Nov. 2, 1967, which is a continuation-in-part of abandoned applications Ser. No. 296,430, July 22, 1963, and Ser. No. 395,043, Sept. 8, 1964. Application for reissue Aug. 5, 1971, Ser. No. 169,558
Int. Cl. D06f *43/108*
U.S. Cl. 8—142 3 Claims

In a method for dry cleaning wherein a dry cleaning solvent containing detergent, hand agents and acidity control agents is employed to wash articles, the solvent and its additives are filtered and periodically distilled to remove contaminates such as dirt particles, dyes, fatty acids, and wherein the additives are depleted during the cleaning of the article, the filtration and the distillation, the improvement which comprises initially employing a solvent compositions which contains the necessary ingredients to clean articles, maintain the acidity of the solvent at a level to prevent odor and permit withdrawal of the articles with a desirable hand; filtering the solvent composition; periodically distilling at least about five percent of the solvent in the system and returning additive-free solvent to the process; and adding the same solvent composition to the process when make-up is required; the result being to maintain by a single periodic addition all of the necessary ingredients to provide a uniform efficacious cleaning of articles.

28,015
ALUMINUM ELECTRODE ELECTROLYTIC CAPACITOR CONSTRUCTION
David A. Vermilyea, Schenectady, N.Y., Donald R. Ochar, Columbia, S.C., and Willem Vedder, Albany, N.Y., by General Electric Co., New York, N.Y.
Original No. 3,622,843, dated Nov. 23, 1971, Ser. No. 881,853, Dec. 3, 1969. Application for reissue Sept. 13, 1972, Ser. No. 288,508
Int. Cl. H01g *13/00*
U.S. Cl. 29—570 6 Claims

Both the passivation of aluminum foil particularly for use as electrodes in wet electrolytic capacitors and the

inhibition of the aluminum-water reaction within the completed capacitor are described. Pretreatment of etched aluminum foil includes the combined steps of immersion in a boiling aqueous solution containing CrO_3 and H_3PO_4 followed by a 3-minute immersion in a boiling solution of controlled pH containing $H_2PO_4^-$, $SiO_3^=$ and CrO_3.


ALUMINUM FOIL CLEANED AND ETCHED
FOIL IMMERSED IN BOILING CrO_3-H_3PO_4 SOLUTION
FOIL IMMERSED IN BOILING SOLUTION OF $H_2PO_4^-$, $SiO_3^=$, CrO_3
ELECTRODE ASSEMBLY FABRICATED
ASSEMBLY IMPREGNATED WITH FILL ELECTROLYTE CONTAINING DIFFUSION SOURCE
IMPREGNATED ASSEMBLY AGED
ASSEMBLY CANNED AND SEALED

Inhibition of aluminum in a wet electrolytic capacitor is afforded by the addition of a concentration of at least one of the following inhibiting ions to the liquid electrolyte: phosphate, phosphite, periodate, arsenate, tungstate, silicate *vanadate* [vandadate], tellurate, tellurite, antimonate, arsenite, selenate, sulfite and germanate.

28,016

OPTICAL SCANNER AND SLIT EXPOSURE DEVICE FOR REPRODUCTION APPARATUS

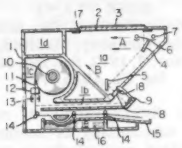
Yutaka Koizumi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Original No. 3,543,290, dated Nov. 24, 1970, Ser. No. 757,538, Sept. 5, 1968. Application for reissue Apr. 19, 1972, Ser. No. 245,667

Claims priority, application Japan, Sept. 20, 1967, 42/60,356, 42/60,357

Int. Cl. G03b *27/32, 27/70*

U.S. Cl. 355—65 **2 Claims**



An optical scanning system for use in a document copying apparatus. Photosensitive paper is exposed by the image of an original document. Light from the original document is reflected by two moving mirrors through a fixed lens and is projected through a slit upon photosensitive paper which is moved in a coordination with the movement of the two reflecting mirrors.

28,017

HYDRAULIC SHIFTING MECHANISM FOR A MECHANICAL TRANSMISSION

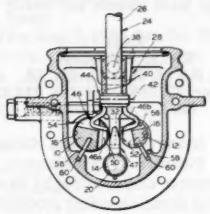
Donald S. Dence, Brooklyn, Mich., assignor to Clark Equipment Company

Original No. 3,677,105, dated July 18, 1972, Ser. No. 71,717, Sept. 14, 1970. Application for reissue May 21, 1973, Ser. No. 361,957

Int. Cl. G05g *5/10, 9/12*

U.S. Cl. 74—477 **10 Claims**

A hydraulic shifting mechanism for a mechanical transmission of the type having a plurality of shiftable pistons for producing corresponding shifting movements in the transmission, and having a manual shift lever and three pistons, including a lower central one and two upper, laterally-spaced ones, the shift lever being movable laterally for selectively engaging the pistons, and movable fore-and-back for shifting the selected piston; the shift lever has a lower end engageable with the selected piston, and is incorporated in a unit having side elements movable laterally with the shift lever but fixed against fore-and-back movement, the pistons having notches and grooves receiving the side elements; the side elements when the shift lever is in neutral or central position, respectively restain the corresponding upper pistons against fore-and-back movement and when the shift lever is moved laterally in either direction, one of the side elements releases the corresponding upper piston and restrains the lower piston against fore-and-back movement, while the other side element continues to restrain its corresponding upper piston.



28,018

VERTICAL TUBE FURNACE

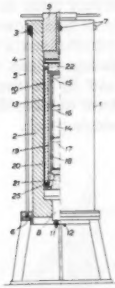
Hans Torbjorn Lundstrom, Robertsfors, Sweden, by Allmanna Svenska Electriska Aktiebolaget, Vasteras, Sweden

Original No. 3,470,303, dated Sept. 30, 1969, Ser. No. 673,623, Oct. 9, 1967. Application for reissue Apr. 2, 1973, Ser. No. 348,049

Claims priority, application Sweden, Oct. 12, 1966, 13,775/66

Int. Cl. H05b *3/62*

U.S. Cl. 13—20 **7 Claims**



A cylindrical oblong furnace arranged in a pressure chamber for isostatic compression with its longitudinal axis substantially vertical. To obtain uniform temperature in the furnace, a heat insulating sheath is provided which comprises at least one cell consisting of a space enclosed in a casing of material with low gas permeability. The said space communicates with its environment through at least one opening situated in an area which is rather short in the vertical direction in comparison with the height of the cell in the same direction.

PLANT PATENTS

GRANTED MAY 21, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,551
BALD CYPRESS

Earl Cully, R.R. 5, Jacksonville, Ill. 62650

Filed Dec. 27, 1971, Ser. No. 212,828
Int. Cl. A01h 7/00
U.S. Cl. Plt.—50 1 Claim

This disclosure concerns a new and distinct variety of Gymnospermae, Pinaceae (Taxodiaceae), commonly known as a bald cypress, characterized by its rapid straight growth of its central trunk, abundant production of lateral primary branches extending at an angle of branching 40 to 45 degrees below vertical and second or tertiary branching usually at increasing angles from the top of the tree downward giving a fuller than usual crown, and the relatively short branches resulting in a tightly pyramidal crown.

3,552
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 24, 1972, Ser. No. 247,192
Int. Cl. A01h 5/00
U.S. Cl. Plt.—75 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the garden chrysanthemum cultivar Grandchild by its flowers which are approximately one-half inch larger in diameter; four to six days longer keeping quality; a lighter, smoother, pastel pink color with less lavender tones, which fades to a smoother, more uniform, overall color as the flower ages; its approximately one inch shorter height, approximately eight inches greater diameter, and approximately three more breaks per plant when flowered naturally as field grown plants from plantings made in mid-June and given a single pinch, by its larger, darker green foliage which is more deeply indented and serrated, and by its two to five days later response in natural season outdoor flowerings planted in mid-June and given a single pinch.

3,553
CHRYSANTHEMUM PLANT

Keith D. Butters, Littlehampton, England, assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 3, 1972, Ser. No. 240,860
Int. Cl. A01h 5/00
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct variety of pompon chrysanthemum which is distinguished from the Hurricane family by its darker yellow color and its superior color retention, and is distinguished from the cultivar Improved Yellow Hurricane by its 3"–4" more vigor, 4–6 days later response, and a smoother flower form with less reflexing at maturity.

3,554
CARNATION PLANT

Peter F. Mazzanti, South San Francisco, and Thomas G. Harcharik, Salinas, Calif.; said Harcharik assignor to said Mazzanti

Filed Feb. 11, 1972, Ser. No. 225,684
Int. Cl. A01h 5/00
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct cultivar of carnation characterized particularly as to its uniqueness when compared to the parent cultivar Tangerine Sim by its variegated color of broad orange stripes on a white background, its approximately ¼"–½" smaller diameter flowers, and its slightly lower petal count.

3,555
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 7, 1972, Ser. No. 304,383
Int. Cl. A01h 5/00
U.S. Cl. Plt.—22 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact, spreading plant, large semidouble Rose Madder flowers borne usually in clusters.

PATENTS

GRANTED MAY 21, 1974

GENERAL AND MECHANICAL

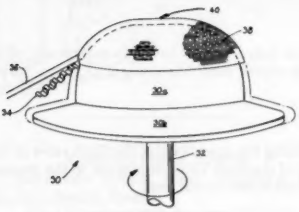
3,811,130
HEADWEAR CONSTRUCTION

Charles E. Townsend, Jr., Townsend and Townsend, One Kearny St., San Francisco, Calif.

Continuation-in-part of Ser. No. 89,218, Nov. 13, 1970, abandoned. This application Oct. 12, 1972, Ser. No. 297,140

Int. Cl. A42b *1/18*

U.S. Cl. 2—177 9 Claims



A headwear and a method of manufacturing headwear providing 95 percent or greater ventilation while at the same time providing adequate shade protection are described. The headwear comprises a crown section of cellular honeycomb, the cumulative cross-sectional open cell area accounting for at least 90 percent of the total surface area, contoured in such a manner as to provide a progressive divergence of angularity between adjacent cells of the honeycomb. The method comprises spirally winding together an elongate flat strip and an elongate corrugated strip on a headwear shaped form. The flat and corrugated strips are thus disposed in alternating arrangement defining open cells therebetween to form a cellular honeycomb contoured to the shape of the form.

3,811,131
DURABLE PRESS PROCESS FOR TREATING CELLULOSIC MATERIAL WITH METHYLOLAMIDES AND ACETIC ACID OR FORMIC ACID VAPORS

Jose P. Gamarra, San Jose; Ronald Swidler, Palo Alto, and Katherine W. Wilson, Newport Beach, all of Calif., assignors to Cotton, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 762,119, Sept. 24, 1968, Pat. No. 3,653,805. This application Mar. 28, 1972, Ser. No. 238,983

Int. Cl. D06m *1/16*, *15/56*, *15/58*

U.S. Cl. 2—243 R 9 Claims

The dimensional stability, wrinkle resistance, smooth drying characteristics and total shape retentivity of cellulosic materials such as cotton fabrics are improved by treatment with acetic acid or formic acid vapors after impregnation of the materials with an aqueous solution of a water-soluble crease-proofing agent containing reactive N-methylol groups such as trimethylolmelamine or DHDMEU, whereby the cellulosic fibers become crosslinked.

3,811,132
CUFF FOR A GLOVE, BAG OR THE LIKE, FOR MANIPULATION INSIDE SEALED ENCLOSURES

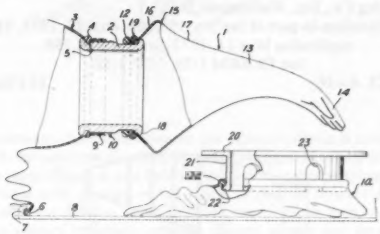
Jean-Michel Segonzac, Bois-Colombes, and Jean-Marie Lucas, Paris, both of France, assignors to La Calhene and Piercan S.A., Paris, France

Filed Aug. 7, 1973, Ser. No. 386,356

Claims priority, application France, Aug. 10, 1972, 72.28963

Int. Cl. A41d *27/10*

U.S. Cl. 2—270 4 Claims



The invention relates to an end cuff for a flexible glove or the like as used to give access to the interior of enclosures and which may form the extension of the sleeve of a protective suit. The construction of the cuff facilitates the replacement of the glove without breaking the sealed conditions.

The cuff comprises a circular end bead and a body portion which extends away from the bead towards the fingers of the glove. An annular portion connecting the bead and the body has an abrupt and considerable increase in diameter after the bead followed by a narrowing portion before joining the body of the glove. The construction of the annular portion is such that in section the increase in diameter forms a rounded open apex angle which in the preferred embodiment is substantially 90°.

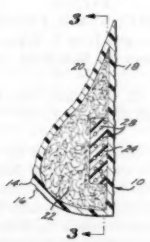
3,811,133
WEIGHTED PROSTHETIC BREAST

Eugene Harris, 3120 Craig Dr., Orange, Calif.

Filed Aug. 31, 1972, Ser. No. 285,157

Int. Cl. A61f *1/00*; A41c *3/10*

U.S. Cl. 3—36 5 Claims



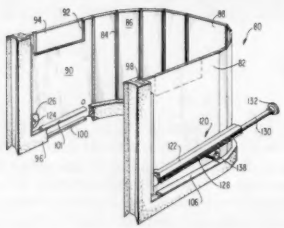
Prosthesis making results in a superior product when a hollow plastic form is filled with a resilient wadding and a discrete

weight. The attributes of external appearance and feel on one hand and the feel associated with wearing the prosthesis on the other hand are dealt with separately. No attempt is made to provide homogeneity or uniform density. Skin is represented by a plastic outer shell or form, inner flesh by wadded fibers compressed to provide feel, and weight is represented by one or more discrete, flexible weights placed to facilitate holding the prosthesis in position. Flesh color is simulated by including cosmetic powder of selected color in the translucent plastic shell. The process and the product of the process are described and a breast restoration is described in particular.

3,811,134
WATER SAVING ATTACHMENTS FOR TOILET GRAVITY FLUSH TANKS

Thomas Marvin Throckmorton, and Charles M. Crawford, III, both of Washington, D.C., assignors to Metropolitan Water-saving Co., Inc., Washington, D.C.

Continuation-in-part of Ser. No. 193,800, Oct. 25, 1972. This application May 14, 1973, Ser. No. 359,750
Int. Cl. E03d *1/20, 1/22, 1/30*
U.S. Cl. 4—18 **14 Claims**



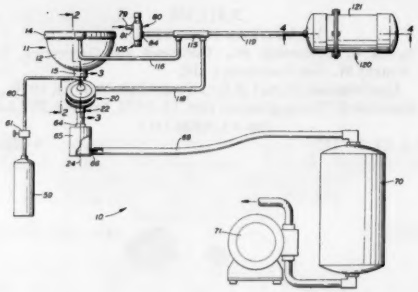
A water saving attachment for gravity flush tanks of water closets wherein the available supply of water for each flush is reduced by a fixed volume. Specifically, this reduction is effected by forming within the tank a water retention compartment having a segment of its side wall perimeter and its entire bottom formed from segments of the tank side wall and tank bottom respectively, the remaining segment of the compartment side wall consisting of a dam or weir for impounding said fixed volumn of water during all phases of operation of the tank mechanism. Pivoted arms are provided adjacent opposite ends of the dam to facilitate introduction of the dam into and securement thereof to the flush tank.

3,811,135
FLUSH CONTROL SYSTEM

Alfred J. Drouhard, Jr., and John R. Weeks, Jr., both of Mansfield, Ohio, assignors to Mansfield Sanitary Inc., Perrysville, Ohio

Filed Dec. 21, 1972, Ser. No. 317,245
Int. Cl. E03d *1/10*
U.S. Cl. 4—76 **11 Claims**

A flush system particularly adapted for toilets from which waste in pneumatically evacuated. A flush valve selectively admits flush fluid, under pressure, into the system. A portion of the flush fluid admitted to the system is directed into the toilet bowl to serve as a prerinse, a flush rinse and, to some extent, an after rinse; a portion is directed to actuate a soil discharge valve; and, a portion is directed to fill the reservoir compartment of an accumulator to serve as the bowl prefill for the subsequent use cycle. In both the soil discharge valve and the accumulator the flush fluid must overcome a predetermined resistance. The operation of the soil discharge valve and the accumulator are not only related to each other by virtue of their predetermined resistance to actuation in response to the pressure of the flush fluid but are also related to the period of time during which the flush valve remains open

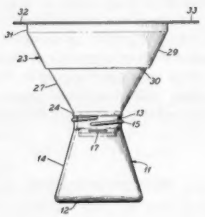


either by timing the open stage of the flush valve or by making the closure of the flush valve responsive to the pressure of the flush fluid within the system itself.

3,811,136
SANITARY URINE COLLECTOR

William G. Whitney, Evanston, and Lawrence Muesing, Winnetka, both of Ill., assignors to W. G. Whitney Corporation, Skokie, Ill.

Filed Sept. 6, 1972, Ser. No. 286,771
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **8 Claims**



Sanitary urine specimen collector including a container, a vertically collapsible funnel made of a relatively rigid flexible material and a releasable connection from the funnel to the container extending over and about the lip of the container and protecting the lip of the container from contamination, in which the funnel is arranged to conform to the body.

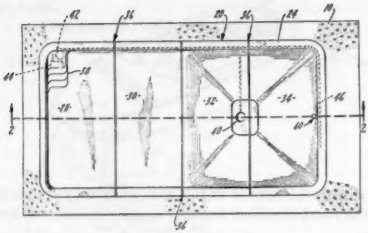
3,811,137
PREFABRICATED SWIMMING POOL CONSTRUCTION

Martin M. Schankler, 12 New Dover Rd., E. Brunswick, N.J.

Division of Ser. No. 782,668, Dec. 10, 1968, Pat. No. 3,660,957, which is a continuation-in-part of Ser. No. 591,365, Dec. 10, 1968, Pat. No. 3,419,917. This application Jan. 13, 1972, Ser. No. 217,678
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **10 Claims**

The apparatus and method for building a prefabricated swimming pool in which a flexible liner is placed within an excavated hole and a rigid shell suspended from a peripheral

walk around the excavation is spaced from the outer liner to define a water cavity. In one form the cavity is sealed from water within the rigid shell, and in another form means are

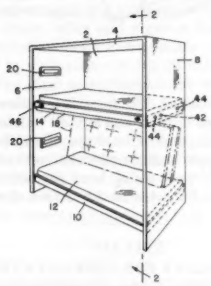


provided for circulation of water from the shell to the cavity, and from the cavity to a pump and filter where it is directed back to the shell.

3,811,138
CONVERTIBLE BERTH

Richard J. Del Missier, Seattle, Wash., assignor to Tri-Way Industries, Inc., Seattle, Wash.

Filed May 30, 1972, Ser. No. 257,912
Int. Cl. A47c *17/40*
U.S. Cl. 5—9 **3 Claims**



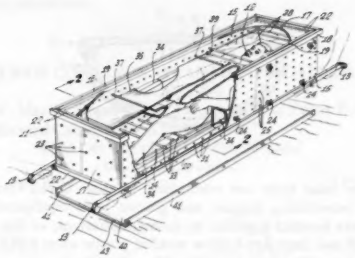
A two level berth structure for use on ships, in railroad cars or the like wherein space is at a premium including a counter balanced upper bunk mounted upon track means at opposite ends whereby the berth may be easily moved from a relatively horizontal position whereat it is locked for sleeping to an inclined position having one side adjacent the top of the lower bunk at a location comfortable for sitting upon the lower bunk and resting your back against the upper bunk. The structure includes the end walls for both the upper and lower bunk and has within the end walls weights to counterbalance the weight of the upper bunk during movement from one location to another.

3,811,139
STRETCHER

Kenneth W. Shaw, P.O. Box 149, Tucson, Ariz.

Filed Oct. 24, 1972, Ser. No. 300,117
Int. Cl. A61g *7/10, 1/02;* **A47c** *17/64*
U.S. Cl. 5—82 **16 Claims**

A stretcher for supporting, immobilizing and carrying an injured person without substantial postural disturbance, and a method for supporting the injured person in the stretcher. A number of elongated support slats are placed under the injured person in generally parallel relation and an elongated frame, which is box-like with open top and bottom sides, is placed over the injured person to closely surround both the person and the support slats. The slats and the person are supported in the frame by a number of rods subsequently inserted in the frame to extend across it, beneath, and generally at right-angles to the slats, the rods having end portions extending through holes in the frame and being secured against axial

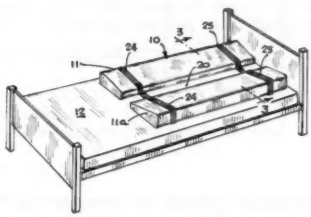


movement. Immobilization of the injured person is achieved with the addition of inflatable pillows placed over and around the injured person and held in position by a top panel and additional rods inserted in the frame to prevent upward movement of the pillows. The assembled stretcher can then be lifted as a unitary structure, and the injured person can be safely carried over rough terrain. Another embodiment incorporates a flatter frame and is particularly well suited for lifting bedridden persons.

3,811,140
BODY SUPPORT DEVICE

Delbert L. Burpo, 113 E. Walnut St., Harrisburg, Ill.

Filed Sept. 18, 1972, Ser. No. 289,766
Int. Cl. A61g *7/02;* **A47c** *21/00*
U.S. Cl. 5—327 R **4 Claims**

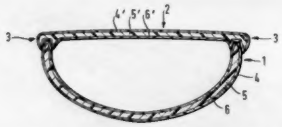


A body support device for supporting a patient in bed while lying on his back which comprises two rigid elongated generally rectangular body support sections adapted to being supported lengthwise on the upper surface of a bed in oppositely disposed mirror-image relationship with the inner longitudinal edges of the support sections being spaced less than the width of the back of the patient being supported on the said sections and having the upper surface of each of the body support sections sloping downwardly and inwardly toward the spacing maintained between the support sections. In one embodiment of the invention the body support sections are interconnected by flexible straps which encircle the oppositely disposed ends of each of the body sections. In another disclosed embodiment the body support sections have rigid plates connecting the oppositely disposed ends of the body support sections.

3,811,141
BOAT HULL AND DECK ASSEMBLY

Helmut Stoeberl, 8201 Eggstaett-Bachham, Germany

Filed Mar. 8, 1972, Ser. No. 232,829
Claims priority, application Germany, Mar. 9, 1971, 2111257
Int. Cl. B63b 5/24
U.S. Cl. 9—6 11 Claims

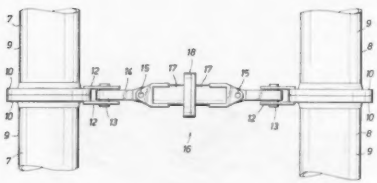


Plastic boat hulls are connected to their decks through nested inter-fitting tongue and groove joint configurations which are bonded together by fusing, adhesives, or the like. The hull and deck are hollow molded plastic units filled with plastic foam. The units have thin fiberglass plastic type spaced parallel walls connected around the peripheries thereof by configurations which form the inter-fitting joint or seam so that the insert layer between the walls is never exposed and water-tight units are provided.

3,811,142
UNIVERSAL SPACER CONNECTOR FOR VERTICAL MOORING BUOY HOSES

Simon Westra, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 235,977
Claims priority, application Netherlands, Feb. 23, 1971, 7102363
Int. Cl. B63b 35/00
U.S. Cl. 9—8 P 1 Claim



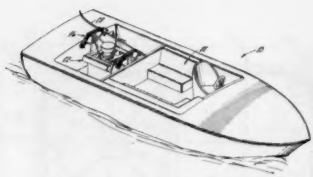
A universal spacer connector for interconnecting the vertical parts of a pair of hoses interconnecting a submarine pipeline with a single buoy mooring comprising two universal joints each allowing rotation around vertical and horizontal axes and including a coupling allowing relative rotation of the two halves of the connector around the longitudinal axis of the connector.

3,811,143
WATER SKI HOLDER

Stewart E. Page, Huntington Beach, Calif., assignor to Kona Boats, Westminster, Calif.

Filed Aug. 10, 1973, Ser. No. 387,359
Int. Cl. A63c 11/02
U.S. Cl. 9—310 R 10 Claims

A holder for storage of water skis adjacent the exposed engine on small to medium sized inboard motor boats. The holder is comprised of two separate carrying surfaces which are anchored above the engine by support members. Existing fixtures of the engine are used to secure the support members to the engine. The water skis assume a position approximately



parallel with the bottom of the boat when they are placed in the holder and a resilient member secures the water skis to the holder.

3,811,144
LIFE BUOY

Senya Yamanka, 39-128 Marunouchi, Ueno-shi, Japan

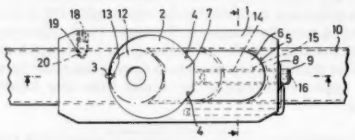
Filed Nov. 27, 1972, Ser. No. 309,942
Claims priority, application Japan, July 18, 1972, 47-86876; July 18, 1972, 47-86877
Int. Cl. B63c 9/16
U.S. Cl. 9—311 1 Claim

A life buoy is disclosed. The buoy is a hollow and elliptic disk member having a bottom wall formed with hard rubber or a hard synthetic resin, and in the shape of a ship bottom having a keel and an upper wall formed with soft rubber or a soft synthetic resin, said buoy being used for holding a human body on the upper wall thereof on the surface of the water.

3,811,145
UNIVERSAL HOLDER FOR THREAD CUTTING DIES

Wilfried Fink, 6250 Diez, Auweg 2, Germany

Filed June 8, 1972, Ser. No. 261,071
Claims priority, application Germany, June 9, 1971, 2128676
Int. Cl. B23g 1/26, 5/04
U.S. Cl. 10—123 P 10 Claims



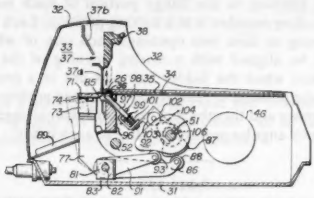
A universal thread cutting die holder comprises a body having an opening to individually accept a number of different thread cutting dies each of which is intended for a pipe, or rod, of a different diameter, with a positioning device having a pair of jaws to grip each die when accepted in the opening, and also including a universal guide having different correspondingly sized openings to concentrically align the respective dies with the object to be threaded.

3,811,146

MACHINE FOR BINDING BOOKS

William H. Abildgaard; Charles T. Groswith, III, both of Los Altos; Heiko T. Deman, Alameda, and Danilo P. Buan, Pleasanton, all of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Jan. 15, 1973, Ser. No. 323,520
Int. Cl. B42c 19/00
U.S. Cl. 11—1 R 10 Claims



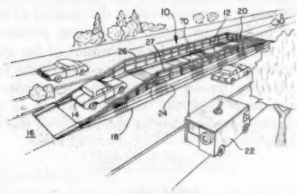
A machine binds paper punched with apertures spaced at intervals near one margin using two thermoplastic strips, the first having studs at intervals and the second having counterbored holes at the same intervals. The paper is placed on the machine platen with the second strip underlying the paper. The studs of the first strip are inserted through the holes in the paper and second strip. A pressure bar is guided to rest on the first strip. A motor is then energized to turn a cam shaft through one revolution. A pressure cam causes downward pull on the pressure bar until a pre-selected pressure is applied to the first strip, whereupon the pressure is held constant until the end of the cycle. After said pressure has been applied, a plurality of heated blades corresponding to the spacing of studs is moved by cam action to cut off the excess lengths of the studs, leaving short stubs beneath the second strip. Next, the blades are raised by cam action to deform the stubs into the counterbores in the second strip. The blades are then withdrawn. Cooling fingers are forced by cam action against the deformed studs to finish the shape of the heads of the stubs and cool same, thereby completing the binding action. The pressure cam releases the pressure bar allowing the bar to be retracted and the completed book removed.

3,811,147

MOBILE ROADWAY REPAIR UNIT

Rollin C. Dix, 2506 W. 107th St., Chicago, Ill.

Filed Aug. 9, 1971, Ser. No. 170,153
Int. Cl. E01d 1/00
U.S. Cl. 14—1 14 Claims



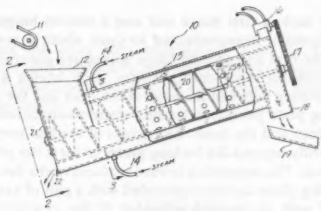
A mobile roadway repair unit including a repair module unit having a platform for carrying traffic over a roadway on which repair is to be performed. The repair module unit may be formed of a plurality of repair modules coupled end-to-end or may be a single repair module. An ascending transition ramp is releasably connected to one end of the repair module unit to direct a vehicle from the roadway upward to the platform of the repair module unit and a descending transition ramp is releasably connected to the other end of the repair module unit to direct a vehicle from the platform of the repair module unit downward to the roadway. Each repair module provides a housing beneath the platform for receiving repair equipment. An enclosure wall is provided for the longitudinal sides of the repair module unit and the transition ramps. The enclosure wall on the longitudinal sides of the roadway repair unit permits the environment beneath the unit to be controlled, blocks viewing of the repair work to prevent slowing of traffic at the repair site, and acts as a safety barrier for workers inside the roadway repair unit.

3,811,148

SCREW CONVEYOR STEAMER FOR SCALLOP PROCESSING

Roger C. Martin, Cocoa Beach, Fla., assignor to Edgar E. Griffis, Brevard County, Fla., a part interest

Filed Oct. 13, 1972, Ser. No. 297,311
Int. Cl. A22c 25/02
U.S. Cl. 15—3.14 2 Claims



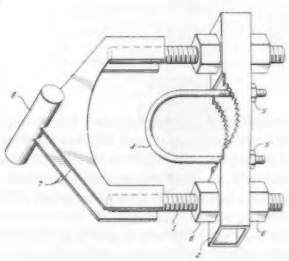
In order to cleanse scallops of dirt, barnacles and the like, and kill bacteria, scallops, still in their shells, are conveyed into a hopper. The hopper is in communication with a screw conveyor inside a perforated cylinder which conveys the scallops to further processing apparatus. The speed of rotation of the conveyor is controlled by a variable speed hydraulic motor. Steam, at a temperature from 215° to 240° F. is piped into an insulated jacket which surrounds a cylinder having holes uniformly disposed about its surface. The perforated cylinder, in turn, surrounds the screw conveyor which permits the steam to contact the scallops in a 360° pattern and thus effectively perform the intended cleansing and sanitizing functions.

3,811,149

ADJUSTABLE GATE HINGE

Ronald G. Griffin, 212 W. 19th, Houston, Tex.

Filed Aug. 31, 1972, Ser. No. 285,244
Int. Cl. E05d 7/04
U.S. Cl. 16—130 3 Claims

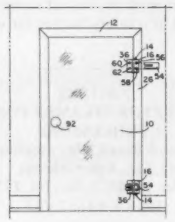


A gate hinge for steel fences, and particularly for large gates, having means for adjusting the proximity of the gate to the gate post.

3,811,150
HINGE LOCK

R. Robert Chalmers, 2650 Pleasant Hill Rd., Hatboro, Pa.

Filed Jan. 3, 1972, Ser. No. 214,809
Int. Cl. E05d *11/00*
U.S. Cl. 16—137 9 Claims

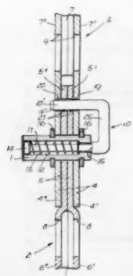


In a hinge lock, a first hinge leaf and a second hinge leaf which are pivotally interconnected to open about a vertical hinge pin. The first and second hinge leaves are generally T-shaped in cross-sectional configuration, each having a leaf portion interfitting between the edge of the door and the jamb and a locking plate portion extending respectively across the face of the door and the jamb. Extensions of the leaf portions project inwardly beyond the locking plates to form the pivotal pin connection. The respective inward surfaces of the first and second locking plates are each provided with a pair of keepers which coact with an opening provided in the extensions to receive a locking arm in sliding horizontal alignment therein. When the locking arm slides completely through the keepers and the extension opening, the arm serves to prevent opening of the door by preventing relative pivotal movement of the first and second hinge leaves. When the locking arm is horizontally urged out of the opening, the first and second hinge leaves are then free to swing about the hinge pin to permit povital opening of the door.

3,811,151
JOINT FOR COLLAPSIBLE LADDERS

Walter Kuemmerlin, Bissingen, Germany, assignor to Firma Zarges Leichtbau GmbH, Bayern, Germany

Filed Apr. 11, 1973, Ser. No. 350,156
Claims priority, application Germany, Apr. 11, 1972, 2217258; Feb. 19, 1973, 2308095
Int. Cl. E05d *11/10*
U.S. Cl. 16—144 13 Claims

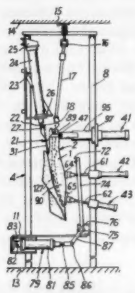


A joint for collapsible ladders, wherein two members are pivotally connected to each by means of a hinge pin. Each member has a flange portion, through which the hinge pin extends, and a shaft portion adapted to be connected to the ladder stringer. A locking member comprising at least two parts adapted to be moved from a first locking position onto a second locking position and viceversa for locking the two members in at least two predetermined angular positions relating to each other. Biasing means connected to the two part of the locking member, which may be telescopically extended, for urging the locking member into one of the locking positions. The locking member being guidingly mounted on the hinge pin and includes a projecting portion which extends through an opening in the flange portion of each member when the locking member is in a locking position. Each flange portion having at least two openings each one of which is adapted to be aligned with a mating opening of the other flange portion when the ladder stringers are in a predetermined angular position to receive the projecting portion of the locking member and thereby lock the two ladder stringers in a predetermined angular position relative to each other.

3,811,152
MACHINE FOR SEPARATING A SHOULDER FROM A FOREQUARTER OF MEAT

Jean Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie., Guebwiller, France

Filed July 14, 1972, Ser. No. 272,069
Claims priority, application France, July 23, 1971, 71.27020
Int. Cl. A22c *5/20*
U.S. Cl. 17—1 R 6 Claims



The machine essentially comprises : a frame, means for suspending a quarter of meat by the shank, a cutting-tool for separating the shoulder from the remainder of the quarter, means for guiding and raising and lowering said cutting-tool, means for positioning and maintaining the quarter of meat in a predetermined position in which the hollow portion at the junction of the shoulder with the remainder of the quarter is located immediately beneath the cutting-tool in the top position, and separating means whereby the remainder of the quarter is separated from the shoulder which is held by suspension means, progressively as the action of the cutting-blade takes place

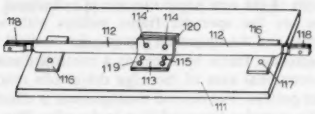
3,811,153
CLAM OPENER

Russell S. Rizzo, N.E. 37 Lincoln St., North East, Pa.

Filed Oct. 10, 1972, Ser. No. 296,283
Int. Cl. A22c *29/00*
U.S. Cl. 17—76 1 Claim

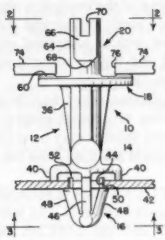
An opener for clams, made up of a platen in the form of a platelike member. Two L-shaped members fixed to the platen in spaced relation to each other, and two blades are swingably connected to a bracket on the platen. The blades are pivoted between two L-shaped bracket members and extend in op-

posite directions. A handle on each blade overlies the edge of the platen and a stop plate is disposed at each end of the platen and supported on the platen adjacent the handles so



that the blades engage the stop plate and prevent the blades from engaging the platen so that clams can be supported on the platen and opened beneath the blades.

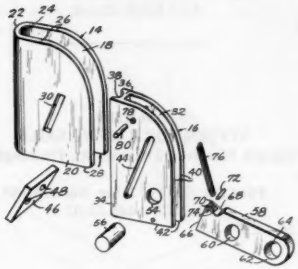
3,811,154
PANEL MOUNTING FASTENER
Richard Jay Lindeman, 2815 N. 72nd Ct., Elmwood Park, Ill., and August Pestka, 1528 Grove Ave., Park Ridge, Ill.
Filed Feb. 26, 1973, Ser. No. 335,629
Int. Cl. A44b *21/00, 17/00*
U.S. Cl. 24—73 P **7 Claims**



A one-piece, rotatable plastic fastener for supporting the edge of at least one panel in spaced relation to an apertured support including positive snap retaining means for rotatable maintenance of the fastener in installed position in the apertured support with shelf-like flange means for supporting the edge of the panel in parallel spaced relation to the support and wing means for locking the panel against the flange.

3,811,155
ROPE GRAB ASSEMBLY
Lawrence R. Stafford, 8 Gracemore St., Albany, N.Y.
Filed June 21, 1972, Ser. No. 264,877
Int. Cl. F16g *11/00*
U.S. Cl. 24—115 G **5 Claims**

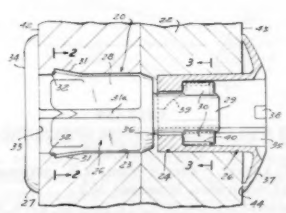
The disclosure relates to a line or cable gripping device of the releasable type used to support a load at a desired point along the line and includes first and second bracket plate members that are U-shaped in cross-section; the second bracket member has dimensions such that it can be slidably positioned within the first bracket member; the bracket members are each formed with pairs of alignable slots for receiving a key member; the slots of the second smaller, bracket member are elongated relative to the slots of the first larger, bracket members so that, when the key member occupies the slots of the bracket members, the direction of sliding motion of one bracket number relative to the other is defined by the position of the slots of the smaller bracket member and the surface of the key member. A lever is pivotably mounted in the second bracket member and spring means are provided for



biasing the lever into engagement with the key member whereby the connecting portions of the two U-shaped bracket members will be maintained in a line gripping position relative to one another.

3,811,156
Patent Not Issued For This Number

3,811,157
TAMPER-PROOF FASTENER
Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.
Filed Oct. 26, 1972, Ser. No. 301,232
Int. Cl. A44b *17/00*
U.S. Cl. 24—221 R **6 Claims**



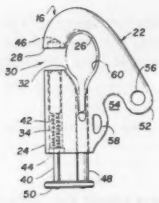
A tamper-proof fastener adapted to fasten at least two panels together with the panels positioned to form an exterior surface and an interior surface and the panels having aligned openings therein to receive the fastener. The fastener includes a stud and a receptacle both of which are adapted to be partially extended into the openings in the panels. At least one laterally extending prong is on one of the stud and the receptacle and a corresponding cam surface terminating in a locking detent is on the other of the stud and the receptacle so that when the stud and the receptacle are positioned in the openings and rotated with respect to one another in one direction the prong will engage with and follow the cam surface into the locking detent. Thereafter, release of one of the

stud and the receptacle will permit only rotation of both the stud and receptacle together. To disassemble, the receptacle is rotated with respect to the stud in a second direction until the prong is moved from the detent over the cam surface to the disengagement position.

3,811,158
SYSTEM FOR RAISING SAILS

Francis Gerard Merser, 33 Grove St., Framingham Center, Mass.

Filed Dec. 26, 1972, Ser. No. 318,184
Int. Cl. A44b *13/02*
U.S. Cl. 24—239 **10 Claims**



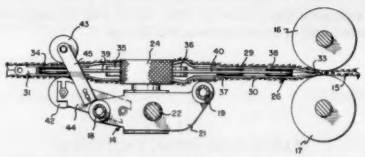
A system for raising sails on a stay including a plurality of shackles having an eye and movable bolt attached to said sail and adapted to be hooked about the stay. A tubular sleeve adapted to be inserted within the eye of the shackle. The sleeve has a slot arranged to be aligned with the opening in the eye whereby the sleeve and shackle are simultaneously placed over the stay. The sleeve and shackle having cooperating means adapted to open and close the bolt of the shackle on movement of the shackle along the sleeve.

3,811,159
METHOD AND APPARATUS FOR SPREADING TUBULAR KNITTED FABRIC

Andrew P. Cecere, Valley Stream, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 101,312, Dec. 24, 1970, Pat. No. 3,685,108. This application July 19, 1972, Ser. No. 273,026
Int. Cl. D06c *5/00*
U.S. Cl. 26—55 R **6 Claims**

The invention is directed to a new spreader-propeller arrangement for handling tubular knitted fabrics in a manner to eliminate marking of the fabric or at least to effect a significant reduction in fabric marking. The new apparatus includes a spreader frame which is received internally of a tube of knitted fabric and is arranged to distend the tube laterally to a flat, two-layered form having a predetermined width. The spreader frame includes belts and pulleys which engage the internal edge walls of the fabric and cause it to be advanced in the desired direction. Driving of these belts and pulleys is effected through edge drive rolls located on the exterior of the fabric and acting through the fabric edge walls. The invention resides in the provision of an arrangement for supporting the weight of the spreader frame and fabric by means of a small upward vertical component of the driving force of the edge drive rolls, rather than by physical confinement of the spreader frame as has been conventional heretofore, thereby eliminating an important cause of fabric marking. The edge drive rolls of the new apparatus are of cylindrical configuration, as are the spreader frame pulleys with which they cooperate, and the invention provides for vertical supporting of the spreader frame by effecting a controlled misalignment of the rotational axes of the edge drive rolls relative to the spreader pulleys. The desired misalignment is effected by tilting of the spreader frame relative to the edge drive rolls, with



the result that, when the edge drive rolls are operated, a slight upward force component is imparted to the spreader frame, sufficient to support the weight of the frame and the fabric passing thereover.

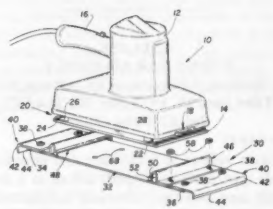
The spreader frame of the invention also incorporates a special combination of hard, cylindrical rolls, selected ones of which are provided with a patterned surface configuration, with the surprising and highly advantageous result of greatly minimizing fabric marking.

The invention includes other significant features, such as low-friction surfacing at critical points, all to the end that delicate and sensitive fabrics may be processed with a practical minimum of process marking from the spreading stage.

3,811,160
SANDER SCRAPING ATTACHMENT

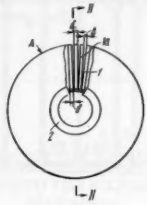
Alfred P. MacDonald, 601 Montauk Hwy., Bay Shore, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,897
Int. Cl. B23d *67/00, 71/00*
U.S. Cl. 29—76 A **2 Claims**



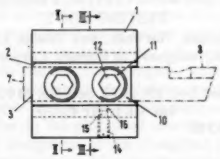
A vibrating-type sander on which an attachment is mounted which advantageously uses the vibratory motion thereof to provide surface-scraping service in addition to usual sanding operation of the unit.

3,811,161
ROTARY CUTTING TOOL
Viktor Samsonovich Salukvadze, 5 Parkovaya, 42, kv. 53, Moscow, U.S.S.R.
Continuation of Ser. No. 239,507, March 30, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 349,081
Claims priority, application U.S.S.R., May 10, 1971, 1662886
Int. Cl. B23p 25/00
U.S. Cl. 29—81 H 26 Claims



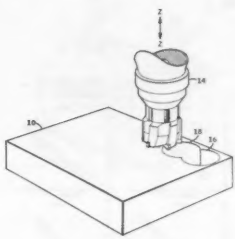
Radially arranged elastic cutting elements of the tool are fixed to one another with one of their ends, in a close proximity to which said cutting elements are forced against one another with their side surfaces, while with their opposite free ends said cutting elements adjoin the tool common cutting surface which is shaped as a surface of revolution; said free ends of the cutting elements, when in free state, are spaced on said common cutting surface some distance apart so that within the zone where the adjacent free ends of the cutting elements come in contact with each other due to one of them being deflected at the moment of cutting, said distance has the value which, when taken as the average one for all such distances in the tool, is less than the thickness of the cutting element nearby the fixed end thereof.

3,811,162
CLAMPING HOLDER FOR A CUTTING TOOL
Otto Bay, Luzernstrasse 351, CH-4553 Subingen, Switzerland
Filed Mar. 14, 1972, Ser. No. 234,569
Claims priority, application Switzerland, Mar. 16, 1971, 3847/71
Int. Cl. B26d 1/02
U.S. Cl. 29—96 1 Claim



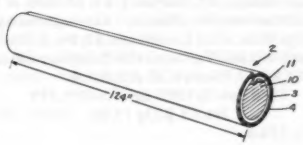
A clamping holder comprising an elongated groove of dovetailed cross-section for lengthwise accommodation of the square steel bar of a cutting tool to be clamped therein, and comprising a wedge-like liner of U-shaped cross-section placed with transversal play in the groove and adapted to embrace the tool bar on three longitudinal sides and pressing screws screwed in the liner for engaging the middle side among the embraced sides of the tool bar and urging the latter with its opposite longitudinal side into clamping engagement with the base surface of the groove, whereby the wedge-like flanks of the liner are adapted to press upon the two other longitudinal sides of the tool bar.

3,811,163
PLUNGE MILLING TOOL
Norman L. Frederick, San Diego, and Charles L. Bennett, Poway, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.
Filed Dec. 7, 1972, Ser. No. 313,035
Int. Cl. B26d 1/12
U.S. Cl. 29—103 A 2 Claims



A mill for deep removal of stock from a workpiece, such as machining pockets, wherein the mill cuts only in a Z direction. After reaching the desired depth, the mill is raised from the pocket and moved in an X or Y direction prior to plunging in for the next cut. A plurality of cutting blades is located on the face of the mill in such a way as to provide chip escape chambers up the inside of the mill, said chambers also serving to carry off the cutting fluid which is introduced to the pocket via a center bore in the mill, terminating at the face of the mill.

3,811,164
IRONER ROLL COVER AND METHOD
Sidney M. Faress, and Dallas C. Thomas, both of Hogansville, Ga., assignors to Uniroyal Inc., New York, N.Y.
Continuation-in-part of Ser. No. 220,947, Jan. 26, 1972, abandoned, Continuation-in-part of Ser. No. 293,966, Oct. 2, 1972, abandoned. This application May 16, 1973, Ser. No. 360,877
Int. Cl. B21b 31/08
U.S. Cl. 29—128 10 Claims

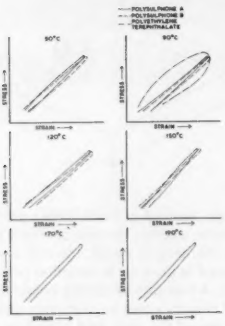


Disclosed is a cover for an ironer roll comprising a fabric one portion of which is impregnated with thermosetting resinous material, such as a phenolic resin, subsequently converted to thermoset form and another portion of which is unimpregnated. The unimpregnated portion of the fabric acts as a liner or padding for the impregnated portion while the impregnated portion serves as the work-contacting surface. Because the liner portion and the work-engaging portion of the cover are integrally formed from a single sheet of fabric, no seam or stitching is required for joining the two portions. Thus, the unevenness caused by a seam is eliminated and manufacturing costs are reduced.

Also disclosed is a method of making such a cover.

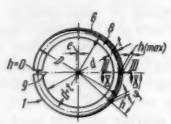
In a preferred embodiment, the cover embodies a narrow portion which is located between the unimpregnated liner or padding portion and the impregnated work-engaging portion and impregnated to a considerably less extent than the work-engaging portion whereby it provides a transitional zone between the unimpregnated portion and the work-contacting portion.

3,811,165
CALENDER ROLLS
Kenneth Irwin Sherrard-Smith, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed July 24, 1972, Ser. No. 274,426
Claims priority, application Great Britain, July 30, 1971, 35974/71
Int. Cl. B21b 31/08
U.S. Cl. 29—132 9 Claims



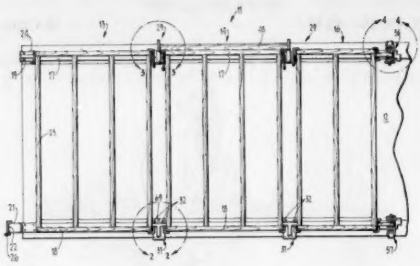
Calender roll made from a rigid core on to which are assembled a plurality of discs of an aromatic polysulphone film held together in axial compression.

3,811,166
METHOD OF MAKING SPLIT METAL PACKING RINGS
Grigory Mikhailovich Zabolotsky, Karamyshevdksya naberezhnaya, 24, kv. 27; Vladimir Mikhailovich Rakovsky, Ulitsa petrozavodskaya, 15, Korpus 1, kv. 65, both of Moscow; Sergei Alexandrovich Shuster, Krasnogorodsky raion, poselok Opalikha, ulitsa Leninskaya, 13, kv. 5, Moskovskaya Oblast, and Mikhail Vsevolodovich Boldyrev, Ulitsa putevoi proezd, 38, kv. 77, Moscow, all of U.S.S.R.
Filed Nov. 3, 1971, Ser. No. 195,190
Int. Cl. B23p 15/06
U.S. Cl. 29—156.6 2 Claims



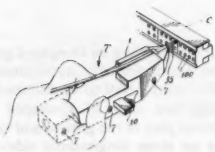
A circular ring blank is strained to impart radial springiness or resiliency thereto by way of a reduction (compression) of the opposite outer flat surfaces thereof on the sections adjacent to the cylindrical surface opposite to its cylindrical sealing surface. Maximum reduction force is applied to the outer flat surfaces that lie against the split and as far as half the width of the ring width, with the same being gradually decreased to zero on the outer flat surfaces adjacent to the ring split.

3,811,167
APPARATUS FOR SIMULTANEOUSLY FABRICATING PLURALITY OF WALL FRAMES
Fredric H. Schneider, 4521 Merrill Ave., Oakland, Calif.
Filed Dec. 5, 1972, Ser. No. 312,302
Int. Cl. B23p 19/00
U.S. Cl. 29—200 P 16 Claims



An apparatus for simultaneously fabricating more than one wall frame at a time is described. An assembly table defines a layout area having a length sufficient to accommodate a plurality of wall frames placed widthwise therealong. A pair of spaced guide rails extend longitudinally of the layout area respectively underneath the locations on the layout area for the top and bottom wall plates of the wall frames. Stops are provided at one end of the guides to define the first end of a first wall frame to be constructed on the layout area. Corner locating members ride on the guide and are positionable therealong at locations determined by the top and bottom plates of such first wall frame. Such corner elements also define corners for the first end of the next wall frame and thereby properly locate such wall frame on the layout area. Additional corner locating elements are also positionable on the guide rails to define the corners of the desired number of succeeding wall frames. The free corners of the last wall frame are defined by end wall corner locating members which are positionable by the plates of the last wall frame. Each of the end corner locating members includes a locking arrangement for securance of the same in place on its associated guide to thereby provide on the layout area a rigid assembly of wall frames for nailing.

3,811,168
POSITIVE LOCKING CONTACT INSERTION AND TESTING TOOL
James D. Anderson, Norwalk, and Ernest L. Cheh, Darien, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.
Filed Dec. 29, 1972, Ser. No. 319,148
Int. Cl. H01r 43/00
U.S. Cl. 29—203 H 10 Claims



A tool for inserting a contact into a connector and for testing if the insertion is successful. The tool has first and second holding devices. The first holding device is active to test if the insertion of the contact into the connector is successful. The

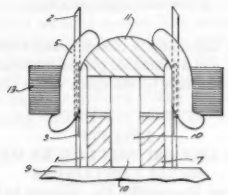
second holding member is for inserting the contact into the connector. A positive locking device is provided so that an operator cannot unintentionally release the first holding device, thereby insuring that the proper testing procedure is followed on each test cycle. The positive locking function results from forming keyways and keys on the first holding device and the positive locking device which interact to prevent release of the first holding device until a predetermined stress level is reached. The yielding stress level is maintained by a resilient device acting on the first holding device which releases a gripped object at an appropriate stress level. A gate device limits entry to the first holding device to insure the integrity of the testing cycle.

3,811,169

ARRANGEMENT FOR INSERTING PREFABRICATED COILS OF WIRE INTO THE SLOT OF ELECTRICAL MACHINES

Guenther Werner, Dresden, Germany, assignor to VEB Elektromat, Dresden, Germany

Filed Nov. 21, 1972, Ser. No. 308,471
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 D **6 Claims**



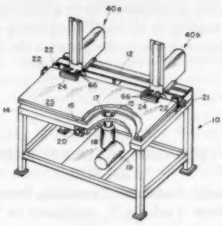
The arrangement includes a supporting structure and a plurality of elongated insertion guide units mounted on the supporting structure and arranged along the periphery of a circle for guiding prefabricated coils. The insertion guide units are spaced from each other in circumferential direction. Adjacent ones of the insertion guide units define between themselves elongated insertion guide slots adapted to receive prefabricated coils and adapted to register with the slots of the electrical machine into which the prefabricated coils are to be inserted. A stripper is mounted on the support structure for movement relative to the elongated insertion guide units, in the direction of elongation of the elongated insertion guide units, and is operative for pushing prefabricated coils in the insertion guide slots along the length of the insertion guide slots into the slots of the electrical machine into which the prefabricated coils are to be inserted. Adjacent insertion guide units comprise facing side wall portions together defining one of the aforementioned elongated insertion guide slots. The facing side wall portions are mounted for sliding movement relative to the supporting structure and also relative to the stripper in the direction of the elongation of the elongated guide slots. Thus, as the stripper pushes a prefabricated coil along the length of an insertion guide slot, wedging of the coil in the insertion guide slot will result in travel of the aforementioned side wall portions with the coil, thereby avoiding the damage which can result to a tightly wedged coil, particularly to the insulation thereof, when pushed by a stripper along the length of the respective insertion guide slot.

3,811,170

METHOD FOR SCREW-MOUNTING OBJECTS TO A WORK PIECE

Edward O. Klukos, 2855 E. Judson, Spring Lake, Mich.

Filed Sept. 21, 1972, Ser. No. 290,876
Int. Cl. B23p *19/00*
U.S. Cl. 29—429 **2 Claims**



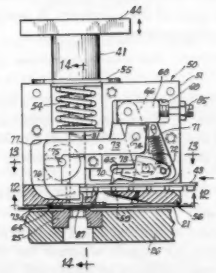
A method for screw-mounting clips or other objects to the edge of a panel is practiced by a machine which includes a fixed housing in which is slidably mounted a main slide assembly including actuatable screw holding jaws at one end thereof. The main slide assembly further includes a screwdriver slide subassembly slidably positioned on the main slide assembly and to which is mounted a pair of powered screwdrivers. The machine includes clip dispensing means aligned with screw positioning means for receiving screws from supply chutes and positioning them for insertion. Means are provided for sequentially actuating the main slide, the screwdriver slide and the jaws for gripping the screws held by the screw positioning means and moving the jaws toward the panel. As the screws are advanced toward the panel, the screwdriver slide moves to preload the spring-loaded screwdriver shafts and the advancing screws capture a clip from the dispensing means and engage pilot holes in the panel. The screw holding jaws are then opened to permit the powered screwdrivers to drive the screws into the panel thereby mounting the clip thereto.

3,811,171

PIERCE NUT APPLYING TOOL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Division of Ser. No. 83,408, Oct. 23, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,234
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D **10 Claims**



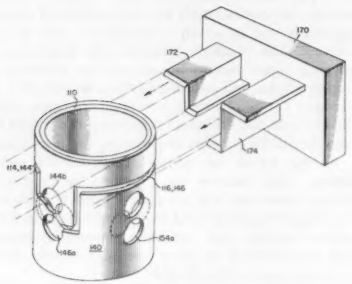
An apparatus for rapidly attaching pierce nuts to a sheet or panel which does not require completely new tooling for different designs of panels. The nuts are made from a strip of metal and are complete except that they are left attached to

one another and are thus predictably oriented. They are supplied to the attaching mechanism in rolled strip form. The attaching mechanism is a standardized unit enclosed in a single housing which automatically locates the end nut of the strip over the workpiece panel, severs the nut from the strip, pierces the panel with the nut and clinches the nut to the sheet while, if desired, embossing the sheet at the opening made therein by the nut. As many such standardized nut attaching units may be used simultaneously in a single punch press as are required, the tooling to be used comprising mainly means for locating the units relative to the panel in the punch press.

3,811,172
METHOD OF MANUFACTURING FLEXURE HINGE ASSEMBLY

Donald J. Bilinski, Randolph Township, Dover, N.J., and Leon Weisbord, New York, N.Y., assignors to The Singer Company, New York, N.Y.

Division of Ser. No. 28,592, April 15, 1970, Pat. No. 3,700,289. This application July 28, 1972, Ser. No. 276,024
Int. Cl. B23p *9/00*
U.S. Cl. 29—445 **4 Claims**



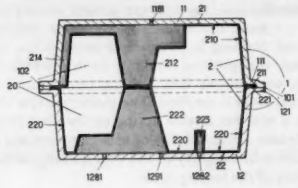
A flexure hinge assembly wherein a pair of fixed telescoped tubular members are provided, each having one or more pairs of axially spaced slots extending through their walls, the ends of one slot of each pair terminating a predetermined circumferential distance from the corresponding ends of the other slot of the same pair to form at least two flexure portions between the ends. The flexure portions of one of the tubular members extend parallel to the axes of the members, and the flexure portions of the other tubular member extend perpendicular to the axes of the members. A method of manufacturing a flexure hinge assembly.

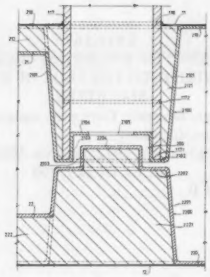
3,811,173
METHOD OF MANUFACTURING TANKS FOR LIQUIDS

Bernard Baumann, 15 Avenue de Friedland, Paris 8e, France

Filed Apr. 24, 1972, Ser. No. 246,856
Claims priority, application France, Apr. 26, 1971, 71.14842
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 **3 Claims**

This invention is addressed to a method for the manufacture of mobile tanks for liquids wherein the tanks are equipped with at least one stabilizer or baffle and the tanks are formed of a metal outer wall, a plastic inner wall and a core of plastic foam in which the metal outer wall and a pre-formed plastic inner wall having a portion corresponding to the inner surface of the outer wall and a portion defining at least one baffle are positioned such that the portion of the inner wall corresponding to the inner surface of the outer wall is in surface contact therewith whereby the portion of the inner wall defining the



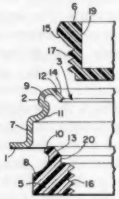


baffle defines a substantially closed space between the inner and outer walls, and a foamable plastic material is supplied to the space to substantially fill the space with a plastic foam.

3,811,174
METHOD OF ASSEMBLING CLOSURE MEMBER FOR METAL CONTAINERS

John W. Eichinger, Sharpsville, Pa., assignor to Buckeye Forge Division - Gulf & Western Industrial Products Company, Grand Rapids, Mich.

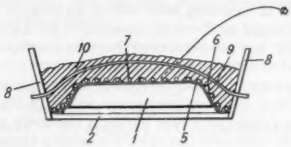
Division of Ser. No. 107,165, Jan. 18, 1971, Pat. No. 3,757,986. This application Feb. 1, 1973, Ser. No. 328,533
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 **3 Claims**



A closure member for a metal container comprising a plastic sleeve member or spud snapped into an opening in the metal container and a plastic plug removably received within the sleeve member. The sleeve member or flange has a radially projecting shoulder at one end which extends into an annular groove in an embossment on the metal container surrounding the opening therein. During insertion of the sleeve member or flange into the container opening, the radial shoulder is bent radially inwardly by the smaller diameter surface of the embossment adjacent the annular groove therein to permit movement of the radial shoulder therepast, after which the radial shoulder returns to its original shape where it is confined

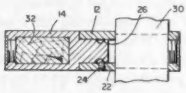
within the annular groove, locking the sleeve member in place. An axially and radially inwardly tapered lip on the embossment overlies the radial shoulder on the sleeve member providing a tapered bearing and sealing surface for sealing engagement by an annular shoulder on the plug when tightened in the sleeve member.

3,811,175
METHOD OF MAKING A SPLIT MOLD
Paul Johnson Garner, Thorpe Bay, and Thomas Robert Stephen Collins, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 886,690, Dec. 15, 1969, abandoned. This application Oct. 30, 1972, Ser. No. 301,711
Int. Cl. B29c *1/02*
U.S. Cl. 29—464 11 Claims



A method of making a split mould having two halves for use in injection moulding. The first mold half is made by applying reinforcing material in the space between a metal shell insert and a positioned locating means. The second mould half is made by positioning a second locating means in engagement with the first locating means, engaging the metal shell of the first mould half with a positioned second metal shell insert so that a mould cavity is defined, filling the mould cavity with liquid reinforcing material, and curing the reinforcing material.

3,811,176
METHOD FOR ASSEMBLING POSTS AND RAILS
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Division of Ser. No. 229,264, Feb. 25, 1972, Pat. No. 3,741,595. This application Nov. 13, 1972, Ser. No. 306,373
Int. Cl. B23p *21/00*
U.S. Cl. 29—469 3 Claims



Handrails and posts are adjustably assembled by means of a rotatably adjustable pierced fitting having a general shape longest in a direction that is perpendicular to both the handrail and post at the same time. The fitting permits adjustment both for height and pitch and has separate means to allow the longitudinally extending posts and handrails to be slid to various positions and then fixed with respect to a portion of the fitting. Means are also disclosed for temporarily fixing the relative position of the posts, handrails and fitting pieces and then rotatably adjusting them, and then permanently fixing their position.

3,811,177
PROCESS FOR BRAZING WORKPIECES OF ALUMINUM CONTAINING MATERIAL
Heinz Schoer, Alfter, and Werner Schultze, Bonn, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany
Continuation-in-part of Ser. No. 98,173, Dec. 14, 1970, abandoned. This application Aug. 29, 1972, Ser. No. 285,100
Claims priority, application Germany, Dec. 15, 1969, 1962760; June 11, 1970, 2028683; Sept. 2, 1971, 2143965
Int. Cl. B23k *31/02, 35/38*
U.S. Cl. 29—494 14 Claims

A process for brazing aluminum-containing work-pieces wherein the brazing filler metal contains components which lower the surface tension and the viscosity of the molten brazing filler metal, and which lower the interfacial tension between the brazing filler metal and the aluminum-containing work-pieces. Useful components are Bi, Sr, Ba, Sb and Be. The brazing filler metal may be used with or without flux.

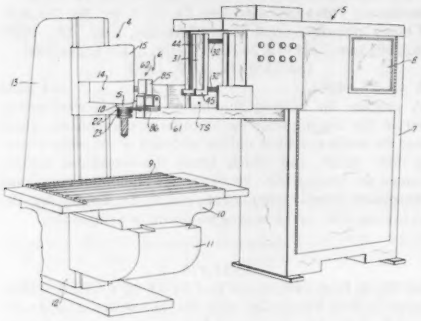
3,811,178
METHOD FOR THE MANUFACTURE OF CORED WIRE
Abram Lvovich Tarnavsky, ulitsa Mayakovskogo, 21-a, kv. 87, and Nail Khabibrakhmanovich Goloveev, prospekt Lenina, 1, kv. 101, both of Magnitogorsk, U.S.S.R.
Filed Apr. 8, 1971, Ser. No. 132,540
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—517 7 Claims

A method of manufacturing cored wire using materials of different plasticity for the core and its surrounding wire, in which blanks which are to be drawn are produced in the process, the blanks being formed of an outer tubular sheath of the material of which the surrounding wire is to be formed, and a coaxially placed elongated center core in the form of a helical core member; the method is characterised in that the helical core outer diameter-to-tubular sheath internal diameter ratio is not greater than 1:3.

3,811,179
TOOL CHANGER
William T. Anderson, Arlington Heights, Ill., assignor to Do All Company, Des Plaines, Ill.
Filed July 16, 1971, Ser. No. 163,268
Claims priority, application Great Britain, Aug. 14, 1970, 39348/70
Int. Cl. B23q *3/157*
U.S. Cl. 29—568 19 Claims

An automatic tool changer in which tools carried by an indexable magazine are brought to a tool transfer station, from which a first one of two indepentently pivoted transfer arms of a tool transfer mechanism takes the tool from the magazine and — by X axis translation of the transfer mechanism — carries that tool to a tool-ready position close to the spindle, but held in an inverted position. Upon completion of the operation being performed by the tool in the spindle, and stopping of the spindle, the transfer mechanism is given Y axis translation and additional X axis translation, to bring the pivot axis of the two transfer arms to a spindle transfer position in which the second transfer arm is in position to swing in an arc tangent to the spindle axis, so that — upon 180° of such swinging motion — this second transfer arm is brought into position to grasp the tool in the spindle and, by swinging in the opposite direction, withdraw the tool from the spindle and hold it in an inverted position. Upon movement of the transfer mechanism

back to its tool ready position, it undergoes Y axis translation to bring the first transfer arm into alignment with the spindle, so that — upon X axis translation of the transfer mechanism



toward the spindle to the spindle transfer position — the first transfer arm carrying the tool it had removed from the magazine can be swung about its pivot axis to insert the tool in its grasp into the spindle.

3,811,180

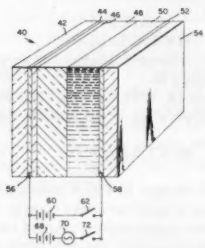
METHOD OF MANUFACTURE OF LIQUID CRYSTAL DEVICE

Morris Braunstein, Marina Del Rey, and William P. Bleha, Jr., Pacific Palisades, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 198,281, Nov. 12, 1971, Pat. No. 3,732,429. This application Jan. 22, 1973, Ser. No. 325,281

Int. Cl. B01j *17/00*

U.S. Cl. 29—572 **10 Claims**



The process for producing the liquid crystal device includes the steps of coating a high impedance material, such as evaporated zinc sulfide, onto a conductive coating supported upon the glass cover plate of the liquid crystal device. Next, the photoconductor layer of e.g. cadmium sulfide is vacuum-deposited. These layers are subjected to post-deposition thermal processing in the form of heat-treating in a substantially hydrogen sulfide atmosphere. Following thermal processing, the liquid crystal layer and the second cover plate are installed to complete the device.

3,811,181

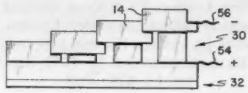
NEW APPROACH TO SHINGLING OF SOLAR CELLS

Charles Z. Leinkram, Bowie, Md., and William D. Oaks, Midland, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 239,869, March 31, 1972, Pat. No. 3,769,091. This application Aug. 27, 1973, Ser. No. 391,101

Int. Cl. B01j *17/00*

U.S. Cl. 29—572 **2 Claims**



A method of mounting solar cells in an array in which the cells are arranged on thermally conductive but electrically insulative wafer and promiences so that they overlap each other in a shingled structure but their bottom surfaces are supported and remain parallel to the top surface of the mounting wafer, the array structure permitting series wiring of the cells and providing a rugged structure having a thermally conductive path from the solar cells through the mounting elements.

3,811,182

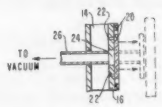
OBJECT HANDLING FIXTURE, SYSTEM, AND PROCESS

William J. Ryan, Sr., Jericho; Edward F. Schirmer, South Burlington; Nandor G. Thoma, Jericho; James H. Tolley, Essex Center, and Donald L. Wilder, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,018

Int. Cl. B01j *17/00*

U.S. Cl. 29—574 **9 Claims**



A system for handling an oriented array of objects, such as integrated circuit chips, includes a fixture in which the chips are held in place by vacuum means. A chip placement tube is capable of reciprocal motion normal to the plane of the fixture to move a chip unidirectionally from its position in the array for placement on a substrate. The system further includes means for positioning a substrate precisely with respect to a chip in the array to allow its direct placement from the array. This fixture and system allows the precise orientation and alignment of semiconductor chips in a wafer to be maintained for laser dicing and chip positioning on a substrate without requiring reorientation. When combined with testing and inspection apparatus and a suitable memory, the system further allows handling and processing of chips to be minimized.

3,811,183

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND SEMICONDUCTOR DEVICE MANUFACTURED BY THE METHOD

Wolter Geppienus Celling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,164

Claims priority, application Netherlands, Feb. 5, 1971, 7101601

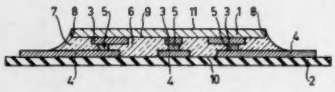
Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **3 Claims**

The invention relates to a method of manufacturing a semiconductor device in which a conductive pattern of a

semiconductor body which is, for example, reinforced, is connected to a conductive pattern of a substrate by so-called "face-down-bonding."

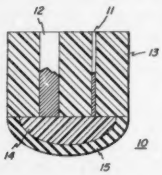
According to the invention, this connection can be mechanically reinforced by introducing a liquid in the aperture between the semiconductor body and the substrate, after having connected the latter together. The liquid is then hardened. The hardening of the liquid and the passivation of the semiconductor body are then obtained simultaneously by the use of certain silanes.



3,811,184
SENSOR AND METHOD OF MANUFACTURE

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 80,902, Oct. 15, 1970, Pat. No. 3,703,457. This application July 21, 1972, Ser. No. 273,844
Int. Cl. H01m 9/04
U.S. Cl. 29—592 **6 Claims**

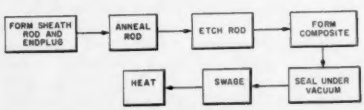


A sensor has a rigid electrically insulating matrix, at least a pair of generally parallel, elongated electrodes embedded in the matrix, the electrodes electrically insulated from each other by the matrix material and opposite ends exposed, an anion exchange resin electrolyte contacting the exposed ends of the electrodes at one end of the matrix and an outer sheath of diffusion barrier material encapsulating at least the electrodes and the electrolyte. Methods of manufacturing such sensors are also described.

3,811,185
METHOD FOR ENHANCING V_3 GA THIN FILM GROWTH

David G. Howe, Greenbelt, Md., and Russell A. Meussner, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1973, Ser. No. 344,402
Int. Cl. H01v 11/14
U.S. Cl. 29—599 **7 Claims**

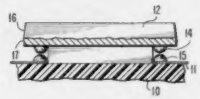


A process for enhancing the growth of A15 intermetallic superconductors which removes impurities that are likely to form diffusion barriers impeding growth.

3,811,186
METHOD OF ALIGNING AND ATTACHING CIRCUIT DEVICES ON A SUBSTRATE

John D. Larnerd, Vestal; Donald M. McGarigle, Binghamton, and Carl E. Samuelson, Johnson City, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,056
Int. Cl. H05k 3/30
U.S. Cl. 29—626 **14 Claims**

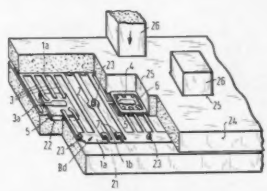


Method for aligning and supporting micro-circuit devices on substrate conductors during attachment thereto in which shaped, flexible, insulative material is placed between the devices and their respective conductors to support heat fusible terminals of the devices in alignment with mating heat-fusible conductor lands during formation of the respective fused connections. The insulative material can be of selected thickness to support the non-attached terminals either in contact or out of contact with their mating lands. When the circuit devices are held out of contact with their lands, the supporting material, being of plastic character, softens during heating to allow contact during the joining of the fusible connections and, upon cooling, returns to a thicker state to elongate the fused connections.

3,811,187
METHOD FOR MASS PRODUCTION OF HOUSINGS FOR SEMICONDUCTOR DEVICES PROVIDED WITH REQUIRED CONNECTING TERMINALS

Burkhart Diel; Kurt Gregor, and Walther Huber, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 67,079, Aug. 26, 1970. This application June 22, 1972, Ser. No. 265,169
Int. Cl. H01r 9/00
U.S. Cl. 29—630 R **10 Claims**

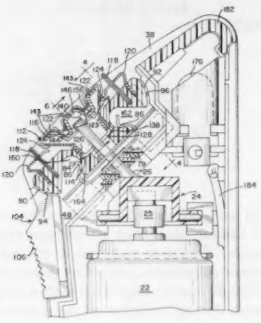


A sheet of electrical contact metal having a pair of substantially planar surfaces is perforated with perforations forming a pattern of spaced individual tongues extending inwardly toward a central area of the pattern in the plane of the sheet. A housing bottom of sinterable insulating material is positioned on one planar surface of the perforated sheet over the pattern of tongues in the central area of the pattern. A lower housing frame portion of insulating material is positioned on the other planar surface of the perforated sheet directly opposite the housing bottom over the pattern of tongues in the central area of the pattern. The housing bottom and the housing frame portion are sintered to hermetically seal the pattern of tongues between the housing bottom and the housing frame thereby forming a box-like lower housing portion with the free ends of the tongues in the central area of the pattern positioned in mutually insulated relation at the bottom of the housing portion.

3,811,188
SHAVER WITH REMOVABLE HEAD

J. Edward Brenneman, and Robert S. Waters, both of Lancaster, Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Oct. 10, 1972, Ser. No. 295,893
Int. Cl. B26b *19/46, 19/42, 19/06*
U.S. Cl. 30—34 R 18 Claims

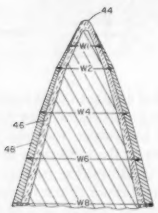


An electric shaver particularly adaptable for use as a lady's shaver, having a detachable pop-out shaving head which is snugly positioned between fixed end walls. The detachable shaving head includes an integral base having a slot into which an outer cutter is releasably secured. The entire head assembly is pivotally released from between the end walls by a user operated head ejector which causes the head to pivot about axes perpendicular to said end walls. In a preferred embodiment, the shaving head includes rows of brushes extending along both sides of the cutter. Also, in a preferred embodiment, the head portion of the shaver includes a special lighting assembly adjacent the shaving head for illuminating the skin adjacent the shaver.

3,811,189
PROCESS FOR PRODUCING AN IMPROVED CUTTING TOOL

Aiyaswami S. Sastri, Stow, Mass., assignor to The Gillete Company, Boston, Mass.

Division of Ser. No. 161,159, July 9, 1971, Pat. No. 3,761,373.
This application Mar. 19, 1973, Ser. No. 342,754
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.53 5 Claims

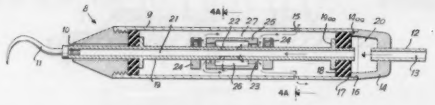


The sharpened edge of a cutting implement such as a razor blade is modified by depositing a layer of dielectric material on the cutting edge and then depositing a layer of electrically conductive material on the dielectric layer and then subjecting the cutting edge to DC ion bombardment so that a portion of the deposited electrically conductive material is removed and the dielectric material is exposed at the tip of the implement.

3,811,190
AIR-VIBRATOR DENTAL SCALER

Anthony T. Sertich, 345 86th St., Brooklyn, N.Y.

Filed May 29, 1973, Ser. No. 364,348
Int. Cl. A61c *3/08*
U.S. Cl. 32—56 17 Claims

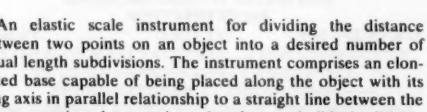


In a preferred embodiment of the invention, a dental scaler for the cleaning of teeth in which the scraper is an air-driven vibrator having a scraper mounted on a distal end of a rigid tubular device, with the rigid tubular device being mounted within a resilient support permissive of vibrations of the rigid tubular device and the vibrations of the tubular device being brought about by the exiting of air onto an air-cushioned rotary wheel mounted around the tubular device rotatably, the rotation thereof resulting from the force of the air from preferably a plurality of ports permitting the air to air to exit from the ports against the inner surface of the air rotary wheel, and the rotation of the rotary wheel being about the vibrations which are imparted to the rigid shaft, while the firmly supported tubular shaft within the resilient support structure thereof itself amplifies the magnitude of the vibrations by itself vibrating and transmitting its vibrations back to the rotary wheel, the outlet ports from the tubular device being angled laterally sidewardly in a direction transverse to the longitudinal axis of the tubular device in a preferred embodiment, as well as the ports being angled in an axial direction relative to the longitudinal axis of the tubular device thereby enhancing the optimal flow of air from within the tubular device into the space between the exterior surface of the tubular device and the inner radius surface of the air wheel and preferably also there being similar angular passages between the tubular device and the outlet portions of the air wheel at end-points of the air wheel axially.

3,811,191
ELASTIC SCALE INSTRUMENT

Michael J. Kelly, P.O. Box 36195, Cincinnati, Ohio

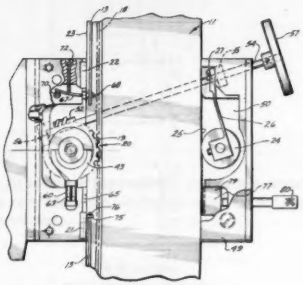
Filed Jan. 22, 1973, Ser. No. 325,314
Int. Cl. G01b *3/08*
U.S. Cl. 33—137 L 8 Claims



An elastic scale instrument for dividing the distance between two points on an object into a desired number of equal length subdivisions. The instrument comprises an elongated base capable of being placed along the object with its long axis in parallel relationship to a straight line between the above mentioned two points. An elongated slide is slidably mounted on the base and is shiftable axially and longitudinally of the base long axis between a retracted position and an extended position with respect to the base. An elastic scale is affixed at one end to a mounting post on the base and at its other end to a mounting post on the slide and is adapted to lie along the straight line between the above mentioned two points. Indicia marks are equally spaced along the elastic scale. The elastic scale is stretchable between a normal condition when

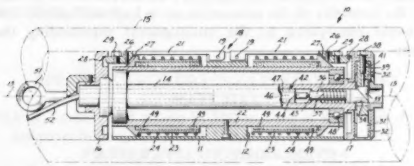
the slide is in its retracted position and a fully stretched condition when the slide is in its extended position. Means are provided to lock the slide with respect to the base at any desired condition of the elastic scale between and including its normal and fully stretched conditions.

3,811,192
HEIGHT GAUGE
Wynn L. Christensen, Yorba Linda, Calif., assignor to Readx Inc., Garden Grove, Calif.
Filed Apr. 26, 1972, Ser. No. 247,646
Int. Cl. G01b *5/00*
U.S. Cl. 33—170 **15 Claims**



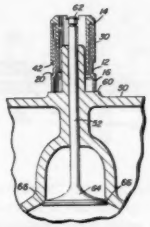
A height gauge has a slide mounted on a staff for vertical travel. A continuous band is driven by the slide and yields a direction and magnitude signal to a read-out circuit. A rack gear on the staff engaged by a pinion on the slide provides for fine adjustment of the slide. Coarse adjustment is facilitated and effected by releasing the pinion from its drive so that it idles along the rack during vertical movement of the slide.

3,811,193
TUBE RADIUS MEASURING METHOD AND DEVICE
Willard Emanuel Rapp, Franklin Township, Somerset County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Apr. 21, 1972, Ser. No. 246,209
Int. Cl. G01b *5/12, 19/72*
U.S. Cl. 33—178 R **19 Claims**



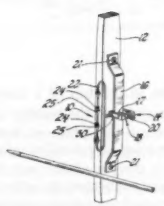
A new gauge provides a direct reading of the radial distance between the axis of a tube and a point of interest on the inner wall of the tube. A first position indicator member, in the form of a probe carrier, is centered within the tube by an exertion of spring forces of substantially equal spring constant radially outwardly from the probe carrier against the inner wall of the tube at a number of positions spaced angularly about the axis of the tube. A balancing of reaction forces, thus, locates the probe carrier coaxially with the tube. Meanwhile, a reference point on a second member, in the form of a probe supported by the probe carrier, is contacted with the point of interest on the inner wall of the tube. An electrical signal, having a voltage proportional to the displacement of the reference point on the probe from the axis of the probe carrier, is generated, the signal voltage thereby indicating the radial dimension of interest.

3,811,194
VALVE STEM HEIGHT GAUGE
Frank C. Swift, deceased, late of Uvalde, Tex., and Viola Swift, executrix, Uvalde, Tex., assignors to Viola Swift, Uvalde, Tex.
Filed Jan. 6, 1972, Ser. No. 215,799
Int. Cl. G01b *5/02*
U.S. Cl. 33—181 AT **14 Claims**



A valve stem height gauge adapted to seat on the engine head and to circumferentially surround a valve stem projecting through the head includes a hollow cylindrical sleeve element having an internally threaded reduced external diameter end portion, a hollow cylindrical jacket element having an externally threaded cylindrical member adapted to be threadably received within the reduced diameter portion and a shirt member circumferentially enclosing and depending from the upper end portion of the cylindrical member to define therewith an open bottom annular space for receiving the reduced diameter portion therein, and diametrically opposed, axially extending slots in the periphery of the upper end portion of the jacket element for aligning the end of the valve stem therewith. The elements of the gauge are adapted to be threadably movable in an axial plane to and away from each other thereby adjusting the overall length of the gauge. Indicia are provided on the elements to indicate the gauge length.

3,811,195
ARCHERY BOWSIGHT
Richard F. Carella, 35572 Strathcona, Mount Clemens, Mich.
Filed Nov. 16, 1972, Ser. No. 307,329
Int. Cl. F41g *1/46*
U.S. Cl. 33—265 **7 Claims**



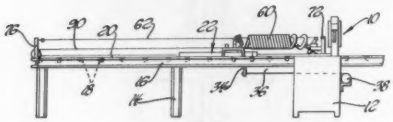
An archery bow sight assembly constructed with sections of heat shrinkable tubing mounted on a wire filament. The use of heat shrinkable tubing as sighting indicators enables the indicators to be firmly secured to the wire at any position with the applicaiton of heat. Once secured, however, the indicators

can be moved by grasping the section of tubing and applying sufficient force to break the bond for subsequent adjustment. After adjustment the section of tubing can again be heated and thereby firmly secured to the wire.

3,811,196
APPARATUS FOR MEASURING A WORK MATERIAL FOR CUTTING TO DESIRED LENGTHS

Henry G. Smith, 2944 Sundridge Dr., Troy, Mich.

Filed June 29, 1972, Ser. No. 267,666
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **1 Claim**

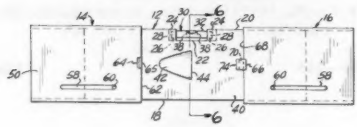


A measuring stop guided for straight line reciprocal and biased movement towards a work tool, means for clamping the stop in a given position apart from the work tool, and a measuring tape having its starting end connected to the reciprocal stop and being extendable and retractable relative to the work tool and set to measure at the work tool the relative distance of the stop, in its clamped position, apart from the work tool.

3,811,197
CONTRACTIBLE LEVEL FOR ARTIFICIAL BREAST ALIGNMENT

Romayne T. Moore, 6988 Ready, Lot 8, and Lilliam E. Powelson, 21442 Audrey, both of Warren, Mich.

Filed Feb. 1, 1973, Ser. No. 328,759
Int. Cl. G01c *9/00*
U.S. Cl. 33—374 **6 Claims**

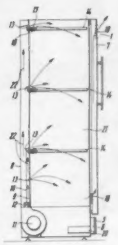


Mounted in a recess in the top of a horizontal elongated plate is a horizontal spirit level, the bubble of which is central when the upper face of the plate is horizontal. Slidably mounted upon the plate for extensibility relatively thereto are two tubular extension covers which are movable outward away from one another to increase the effective length of the device and movable inward toward one another to decrease its length for compactness of storage or carrying, as in a lady's purse and for protection of the spirit level from damage. The middle portion of the plate on one side thereof has a cavity therein and the two slidable extension covers are provided with a detent device which holds them together unless it is released by pressing the wall of the detent catch into the cavity to release it from the groove of the coacting detent latch. The extension covers are slotted to receive stop pins seated in the plate to limit their outward sliding and to prevent them from sliding off the plate.

3,811,198
METHOD AND DRYING CLOSET FOR DRYING LAUNDRY AND THE LIKE

Hans Baltes, Heideweg 21 a, 5841 Holzen, Germany

Filed May 22, 1972, Ser. No. 255,832
Claims priority, application Germany, May 21, 1971, 2125369; Oct. 6, 1971, 2149875
Int. Cl. F23b *3/50*
U.S. Cl. 34—24 **9 Claims**



A method and apparatus for drying laundry or the like is provided with a cross flow of heated air issuing generally parallel to the laundry from a first vertical wall in planes generally parallel to the hanger rods for the laundry. A plurality of vertically spaced hanger rods are provided with the heated air being discharged from the plurality of air discharge means located vertically at the level of the respective hanger rods to direct the air substantially parallel across the tops of the rods with the air outlet means being at the lower end of the opposite vertical wall for moving air from the enclosed interior of the closet. In the preferred embodiment of the invention, the air is discharged from a back wall and the air is collected at the bottom of the front wall and then the collected air flows upwardly through a door of the closet to discharge at the top of the door. The hanger rods are preferably in the form of hanger grids which may be pivoted downwardly and which may be removed in order to provide space for large pieces of laundry hanging down from the uppermost hanger rods. Because of the large air throughput with the cross flow principle, the humidity of the exhausting air is kept sufficiently low to avoid annoyance to the environment surrounding the closet.

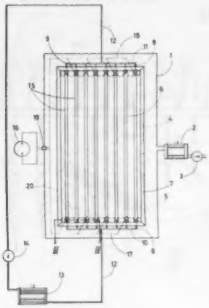
3,811,199
FREEZE-DRYING APPARATUS

Jean-Pierre Bouldoires, La Tour-De-Peilz, Switzerland, assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., Lousanne, Switzerland

Filed Sept. 27, 1972, Ser. No. 292,828
Claims priority, application Switzerland, Sept. 30, 1971, 14196/71
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **13 Claims**

Freeze-drying apparatus comprising a chamber, means for maintaining a reduced pressure in the chamber, at least one tray defining a receptacle for product to be dried and including a plurality of electrically insulated parallel metallic partitions dividing the receptacle into compartments, means for supplying heat to the product to be dried, and at least one

device, for measuring the capacitance and/or the associated resistance of a condenser, connected to at least two of the partitions so as to measure the capacity and/or the associated resistance of a condenser the electrodes of which are constituted by the said partitions.



3,811,200
DRYING OF WOOD

Bror Olof Hager, Djursholm, Sweden, assignor to Hager Aktiebolag, Stockholm, Sweden

Filed Feb. 22, 1973, Ser. No. 334,938
Claims priority, application Sweden, Feb. 22, 1972, 2189/72
Int. Cl. F26b *3/00*
U.S. Cl. 34—9.5 **9 Claims**

Wood in the piece, initially containing an undesirable amount of water (moisture) may rapidly yet safely be dried as follows: The wood is heated, in a closed container, under reduced pressure at a temperature not exceeding 90°C., in a bath of a water-immiscible drying medium having a boiling point above 150°C. but not above 250°C., for a period of some hours. In the operation, the extent of the partial pressure is adjusted to minimize distillation of drying medium whilst promoting evaporation of water from the wood.

To minimize "loss" of drying medium left in and on the treated wood, the wood may, after removal of the bath of medium from the container, be held for some time, under vacuum, in the container.

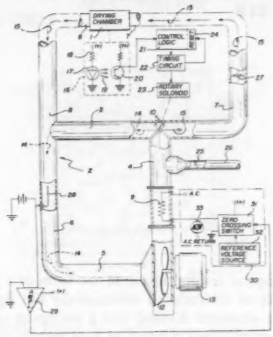
Steam-medium so driven off is conducted to a separate space where medium is separated from water and returned to the drying process.

3,811,201
APPARATUS FOR DRYING A PHOTOGRAPHIC MATERIAL

Dale S. Endter, and Edwin E. Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,754
Int. Cl. F26b *21/02*
U.S. Cl. 34—54 **6 Claims**

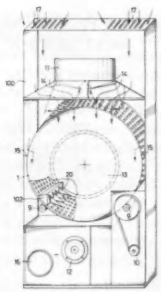
A drying apparatus is provided with a holding chamber, in which a heated gas is stored at a substantially constant temperature, and with a drying chamber, in which a photographic material can be located for drying by the heated gas. Gas supply and return ducts separately connect the holding and drying chambers. A blower is disposed for circulating the heated gas in the holding chamber and, alternately, for urging the heated gas from the holding chamber, along the supply duct, to the drying chamber and from the drying chamber, along the return duct, to the holding chamber. A valve is effective in a closed mode to cause such circulation of the heated gas by the blower and is effective in an open mode to cause such urging of the heated gas by the blower. A detector senses the presence of a photographic material in the drying chamber and, in response thereto, effects the open mode of the valve. After a sufficient period of time has elapsed to dry the photographic material in the drying chamber, a timing circuit effects the closed mode of the valve.



3,811,202
DRYER FOR TEXTILES

Hans F. Arendt, Bietigheim, Germany, assignor to Hans F. Arendt Maschinenbau, Bietigheim, Germany

Continuation of Ser. No. 163,389, July 16, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,297
Claims priority, application Germany, July 18, 1970, 2035825
Int. Cl. F23b *11/02*
U.S. Cl. 34—133 **9 Claims**

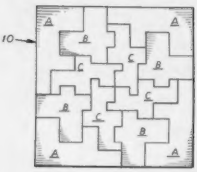


This disclosure teaches a dryer for textiles, particularly laundry from which a preliminary removal of water has been effected. A conventional perforated drum, through which heated air is passed and which is arranged for rotation about a horizontal axis, is provided with ribs on its inner cylindrical wall for tumbling and conveying axially the textiles being dried. The ribs have leading flanks engaging the textiles with angles α_1 preferably at least 20° formed with radii of the drum going through the apexes of the ribs. The ribs have slide plates on their lagging flanks, which slide plates are inclined by acute angles from which the apexes of the ribs, so that they convey the goods axially. Rotation of the drum can be in a single sense or it may be reversible.

3,811,203
PUZZLE FOR PSYCHOLOGICAL TESTING

Susan Mayfield, 825 Crane Dr., Apt.103, De Kalb, Ill.

Filed Apr. 12, 1973, Ser. No. 350,310
Int. Cl. G09b 1/36; A63f 9/10
U.S. Cl. 35—22 R 7 Claims

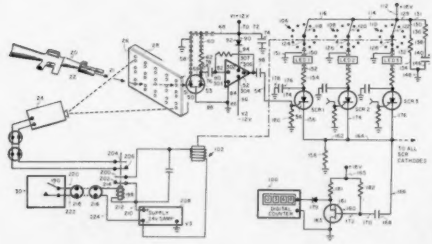


A psychological testing device in the form of a puzzle having a plurality of interrelated substantially flat jigsaw puzzle elements, the elements divided into a minimum of three sets with each set including a total of four puzzle pieces of an identical shape and size, the puzzle pieces of any one set being different from the puzzle pieces of any other set, and with the puzzle pieces within each set being interchangeable amongst themselves with each adapted to occupy any one of the number of preset positions intended for anyone of the puzzle pieces of the particular set, and to occupy only such positions so that when the puzzle pieces of all of the sets are properly placed together a square is formed. The number of possible solutions of the puzzle is equal to 4^n where the numeral 4 represents the total number of puzzle pieces in any one set, and the letter n represents the total number of sets in the puzzle.

3,811,204
PROGRAMMABLE LASER MARKSMANSHIP TRAINER

Albert H. Marshall, Maitland, and George A. Siragusa, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1973, Ser. No. 343,775
Int. Cl. A63f 9/02
U.S. Cl. 35—25 8 Claims

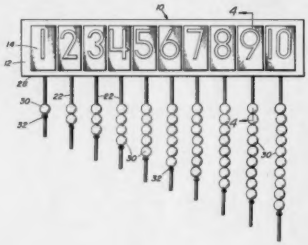


A marksmanship training system employing a screen for viewing a program of slides of different battle scenes each with a target portion in the projected image oriented in relation to one or more of a plurality of light detectors supported behind the screen in a matrix and each capable of being actuated by a laser attached to a weapon being fired to actuate an associated hit indicating lamp and cumulative hit counter. A slide projector and a sequential detector switching means are simultaneously actuated from a common programming means to vary projected images and target areas located therein by sequentially projecting slides and sequentially varying connected light detectors.

3,811,205
SENSORIAL COUNTING BOARD

Mary Ann Pitzler, 114 157th Ave., N.E., Bellevue, Wash.

Filed Jan. 22, 1973, Ser. No. 325,960
Int. Cl. G09b 19/02
U.S. Cl. 35—32 3 Claims



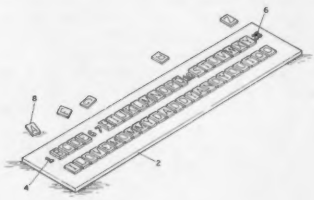
A sensorial counting board or educational toy having an elongated board having vertically arranged, longitudinally spaced, areas of various colors on which are respective numbers from 1 – 10. These numbers are raised.

Depending from the board and below each number is a cord with beads slidably disposed thereon and prevented from removal by respective knots. The beads are variously colored and are all of the same size. The size of the hole through the beads are such that the beads will slide on the cords but the fit is snug enough so that the beads will be held on the cords to wherever they are moved.

3,811,206
DEVICE FOR TEACHING ALPHABETIC ORDER

Richard Gaccetta, 6646 E. 17th Ave., Denver, Colo.

Filed Mar. 5, 1973, Ser. No. 338,175
Int. Cl. G09b 1/06
U.S. Cl. 35—35 H 2 Claims



A device designed to provide the elements of learning techniques, while affording the added benefits of holding the attention of small children, is disclosed herein.

The "Funzie game," by means of pre-determined positions of each of the movable blocks in the game, allows small children to rapidly absorb the basics of counting and spelling, as it becomes apparent to the child that each block in both rows of the board will fit on only one position (the correct one), thus reducing errors and uncertainty, while allowing the child to learn by trial and error methods.

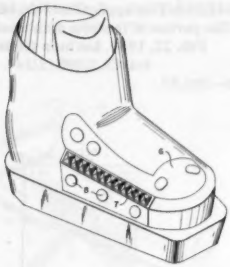
3,811,207
DEVICE FOR CLEANING SOLES OF SHOES

Gunter Peis, Heigelstrasse 4, 8000 Munich 90, Germany

Filed Aug. 10, 1972, Ser. No. 279,358
Int. Cl. A43b; A47l 13/12
U.S. Cl. 36—2.5 AL 11 Claims

A shoe, particularly a ski boot, work shoe or the like, has a scraper mounted on or integral with the upper part of the shoe

extending between the ankle and large toe and has a length corresponding substantially to the width of the sole of the



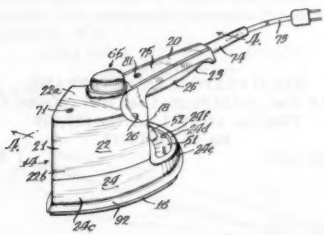
shoe. The scraper may comprise a metallic insert, a synthetic plastic material or comprise a blade which constitutes the scraping edge.

3,811,208

ELECTRIC STEAMING AND PRESSING APPLIANCE

Joseph L. Vieceli, La Grange, and James T. Williams, Downers Grove, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Nov. 7, 1972, Ser. No. 304,441
Int. Cl. D06f *75/06, 75/36*; D06c *1/00*
U.S. Cl. 38—77.8 **24 Claims**



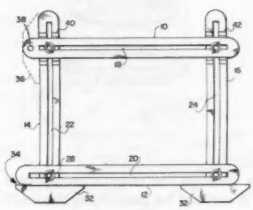
An electric pressing iron adapted for operation in a horizontal plane for pressing fabrics or usable in a vertical plane to steam hanging clothes, drapes and the like. The iron includes a small compact soleplate above which is superimposed an all plastic reservoir and handle assembly having the handle extending outwardly from the reservoir and a housing portion positioned between the reservoir and the soleplate enclosing a thermostat and a temperature control arm. The means for delivering water from the reservoir to a steam chamber on the upper surface of the soleplate comprises a compact pump having a diaphragm which is operable by direct finger pressure to deliver water from the reservoir to the steam chamber. The pump which is mounted in an opening for the reservoir is removable to permit the pouring of water into the reservoir. The reservoir and handle include a one piece injection molded plastic member which includes a downwardly facing cup-shaped portion which is closed by the housing member to form the reservoir. The pump permits the iron to be operated in any position while delivering substantial quantities of steam from the orifices disposed in the soleplate.

3,811,209

EMBROIDERY FRAME

Hope Hanley, P.O. Box 537, Purcellville, Va.

Filed May 14, 1973, Ser. No. 359,820
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.6 **6 Claims**



An adjustable frame for embroidery, quilting, needlepoint and the like, having interconnected side members relatively adjustable with respect to one another for size and configuration adjustment, to hold a piece of material in a taut condition, with braces in the nature of chucks being provided at selected points of side member interconnections for strength, rigidity and user comfort and adaptability.

3,811,210

MILD CURE FINISHING PROCESS INCORPORATING IMPROVED CATALYST SYSTEMS TO PRODUCE WRINKLE RESISTANT, DURABLY PRESSED AND CREASED CELLULOSIC TEXTILE PRODUCTS

Norton A. Cashen; Russell M. H. Kullman, both of Metairie, and Robert M. Reinhardt, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 26, 1972, Ser. No. 221,079
Int. Cl. D06m *13/12, 13/34*
U.S. Cl. 38—144 **20 Claims**

Improved catalyst systems have been found that can be used in place of the strong mineral acid catalysts previously required in the mild cure finishing process for cellulosic textiles. These improved catalyst systems consist of mixtures of ammonium chloride and an acid selected from the group, phosphoric acid, citric acid, oxalic acid, tartaric acid, and trichloroacetic acid. Unlike cellulosic fabrics treated by the mild cure finishing process with strong mineral acid catalysis, fabrics similarly processed with the improved catalyst systems need not be neutralized and washed immediately after curing to prevent strength loss during subsequent storage. The wrinkle resistant fabric thus produced may be used as a precured product or may be additionally processed to impart shape and creases by a combination of steam pressing and dry pressing.

3,811,211

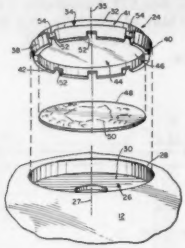
BOWLING BALL INDICIA DISPLAY MEANS AND METHOD OF ASSEMBLYING SAME

Donald F. Morgan, Bloomingdale, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed June 3, 1971, Ser. No. 149,494
Int. Cl. G09f *3/02*; A63b *37/00*
U.S. Cl. 40—2.2 **8 Claims**

A one-piece rigid insert which may be of transparent, plastic material is adapted to be fixedly secured within a recess formed in the outer surface of a bowling ball or the like. The insert's outwardly facing surface is convex so as to conform to the outside curvature of the bowling ball and is flush-mounted with respect thereto when secured in place within the recess. The insert further includes means axially displaced below its outer convex surface for supporting a display member having indicia disposed thereon. Thus, when the insert is fixedly

secured within the bowling ball recess the display member is completely protected by the insert with the indicia being



plainly visible through the insert's transparent convex outer face portion. A method for assembling the insert and installing it in the bowling ball is also disclosed.

3,811,212

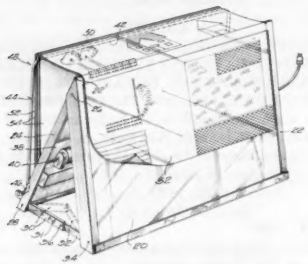
TRANSPARENCY DISPLAY DEVICES

John S. Wright, 6115 North Lake Dr. Ct., Milwaukee, Wis.

Filed Jan. 31, 1972, Ser. No. 222,060

Int. Cl. G09f *13/10*

U.S. Cl. 40—106.1 **1 Claim**



Transparency display devices to display bound books of transparencies include a translucent screen mounted in a frame which is at a substantial angle to the horizontal plane when the translucent screen is arranged for viewing. A light source is provided behind the translucent screen and a transparency book support is arranged to oscillate to and from proximity with a margin of the screen to facilitate the removal of transparencies from viewing position to storage position. Two modifications of this support are shown, which respectively oscillate and reciprocate. Two support cabinets include one capable of being folded into a relatively flat package for transportation, and one permanent cabinet having storage for the transparencies in the form of tracks to receive the ring binder portion of the book while allowing the transparencies to hang in a protected place.

One version of the transparencies has an aperture at each corner of its free margin. The support cabinet has a stud which supports the transparency when the aperture is placed over the stud, the stud being removable automatically when the support is reciprocated to simultaneously release the free margin of the transparency and to pull the support away from the translucent screen to permit the transparency to return of its own weight to its storage position.

A method of changing displayed transparencies by moving a support for a binder of transparencies away from a translucent display screen, returning the support to the vicinity of the screen margin and inverting another transparency about the binding to overlie the translucent display screen is also disclosed.

3,811,213

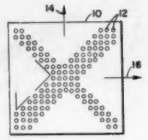
MOIRE MOTION ILLUSION APPARATUS AND METHOD

Robert B. Eaves, Wayne, Pa., assignor to Photo-Motion Corporation, King of Prussia, Pa.

Continuation-in-part of Ser. No. 877,298, Nov. 17, 1968, Pat. No. 3,643,361. This application Feb. 16, 1972, Ser. No. 226,846The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.

Int. Cl. G09f *13/34*

U.S. Cl. 40—106.53 **14 Claims**



Apparatus and methods are presented for the simulation of motion through the use of moire patterning. Motion simulation is accomplished with two overlay transparent sheets imprinted with dot patterns of different frequencies. One of the sheets, having a plurality of sections of dot patterns of different frequencies, is held stationary and the other sheet, having a uniform dot pattern, is moved relative to the stationary sheet, and an illusion of motion is created on the stationary sheet by movement of moire patterns resulting from the interaction of the dot patterns on the two sheets. The sections on the stationary sheet may be scraped or otherwise burnished to remove some of the dot patterns in the section to generate open areas whereby both uniformity of light transmission and motion illusion may be enhanced.

3,811,214

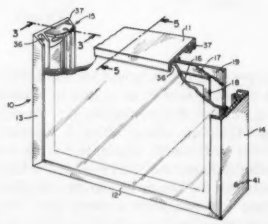
MULTI-PURPOSE PICTURE FRAME

Raymond F. Tate, 21423 Pacific Coast Hwy., Malibu, Calif.

Filed Nov. 16, 1971, Ser. No. 199,139

Int. Cl. G09f *1/12*

U.S. Cl. 40—152 **5 Claims**

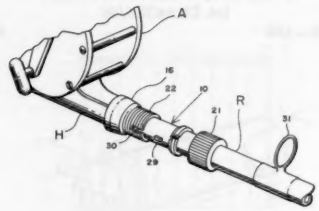


There is disclosed a picture frame which may be assembled without the aid of tools and whose internal configuration provides various slots or grooves to secure a picture therein in several positions, e.g., front or rear floated, front or rear matted; combinations of these; shadow boxed etc. Corner pieces are disclosed which include sliding bar means and snap-in means for quick assembly of the sides of the frame.

3,811,215
LOCKING DEVICE FOR FISHING RODS

Oscar Fleischer, deceased, late of Century Towers, 100 Kings Point Dr., North Miami Beach, Fla. (Helen Krohn Fleischer, executrix)

Filed Sept. 5, 1972, Ser. No. 286,598
Int. Cl. A01k *87/02*
U.S. Cl. 43—18 R **1 Claim**

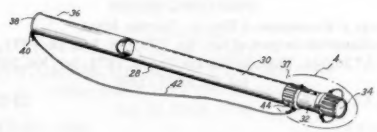


A device for locking a fishing rod to the handle tubular member having telescoping members whereby the end of the rod is received by a socket formed in the tubular member. The latter which is threaded receives a lock nut slidably positioned on the rod, the lock nut being provided with an annular shoulder for engaging a compression ring. The ring is split having an inclined front edge which engages an oppositely inclined edge of the tubular member so that as the lock nut is threaded on the tubular member, the compression ring is compressed to engage the rod tightly as the ring is forced into tight engagement with the end of the tubular member whereby the handle member and rod are fastened securely together.

3,811,216
ADJUSTABLE FISHING ROD CASE

Lawrence K. Sauey; Leroy W. Mason, and Gerald A. Rau, all of Baraboo, Wis., assignors to Flambeau Products Corporation, Baraboo, Wis.

Filed Nov. 3, 1972, Ser. No. 303,622
Int. Cl. A01k *97/08*
U.S. Cl. 43—26 **3 Claims**



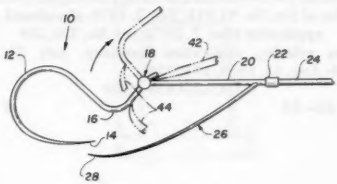
An adjustable fishing rod case is provided with an outer member, an inner member, and means for securing the members together. The outer member and inner member are telescopically engaged. A plastic hinge lever, including a pin, is mounted on a collar at one end of the outer member. The pin engages one of a series of well-shaped cups in the inner member to lock the members together. A longitudinal groove in the inner member receives a projection on the collar of the outer member to guide the well-shaped cups to the pin.

3,811,217
FISH HOOK RELEASING DEVICE

Bernard Watkins, P.O. Box 223 Culver Lake, Branchville, N.J.

Filed May 21, 1973, Ser. No. 362,460
Int. Cl. A01k *83/00*
U.S. Cl. 43—44.82 **5 Claims**

An improved fish hook, devoid of any barbs or barblike structure, the absence of which greatly facilitates both the hooking and disengaging of any hooked fish therefrom is pivotally mounted to an elongated body. Cooperating therewith and mounted to extend from the body is a spur, the pointed end of which is taken into the fish's mouth along with the hook during the hooking of a fish. The free end of the spur extends beyond the hook point in facing relation thereto and

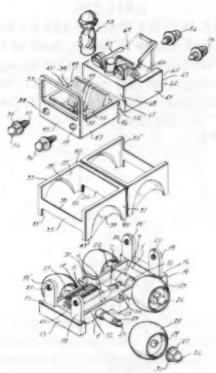


both hook and spur engage the fish internally and prevent its inadvertent release from the hook and also from swallowing the hook down into its stomach. The shallow depth of intake contributes to the facilitated release of the hooked fish. A tong-type implement is used with the device to withdraw the hook from its engagement with the hooked fish.

3,811,218
MODULAR TOY VEHICLE

Robert W. Salmon, Huntington Beach, and Barry S. Herstein, Spring Valley, both of N.Y., assignors to Buddy L Corporation, New York, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,358
Int. Cl. A63h *33/10*
U.S. Cl. 46—17 **9 Claims**



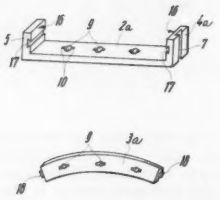
A toy vehicle of modular construction, commonly referred to as a together take-apart toy, having a chassis, and front and rear body subassemblies detachably mountable upon said chassis in tandem relationship. Each subassembly comprises a frame and a component supportable thereon; said frames being identical for interchangeability and said components being secured, by headed and threaded fasteners, to posts

which extend up through the frames from the chassis. A figurine having a hexagonal socket in its base may be detachably mounted as the vehicle driver and also used as a wrench to turn the fasteners.

3,811,219
FLEXIBLE MEMBER AND ARCUATE MEMBER ATTACHABLE THERETO FOR IMPARTING CURVATURE

Artur Fischer, Altheimer Str., D-7241 Tumlingen, Germany

Division of Ser. No. 51,951, July 2, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,254
Claims priority, application Germany, July 31, 1969, 1938946; Aug. 16, 1969, 1941725
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **8 Claims**



At least two elongated structural elements are provided. They are of open-profiled cross-section, that is of T-shaped, U-shaped or similar cross-section, and have spaced opposite ends each of which has a flange extending transversely to the elongation of the respective element. Connecting means is provided at least on the axially outer sides of the respective flanges.

3,811,220
RAG DOLL WITH CHANGEABLE FEATURES

Marvin I. Glass, and Kathy A. Dunn, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

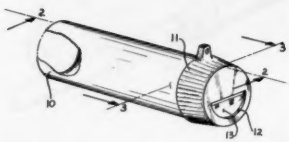
Continuation-in-part of Ser. No. 119,121, Feb. 26, 1971, abandoned. This application July 6, 1972, Ser. No. 269,459
Int. Cl. A63h *3/12*
U.S. Cl. 46—135 R **4 Claims**

A child's rag doll characterized by the provision of a plurality of panels with different simulated facial expressions thereon, with the panels being hingedly connected to the doll and, further characterized by the provision of a means for holding the panels in an upper position, overlying the doll face, and a lower position, overlying the doll torso.

3,811,221
WILD FOWL DECOY DEVICE

John E. Wilt, 825 Green Hill Rd., West Chester, Pa.

Filed Feb. 2, 1973, Ser. No. 329,039
Int. Cl. A63h *5/00*
U.S. Cl. 46—180 **3 Claims**

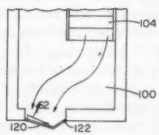


An improved wild fowl decoy device comprises a hollow tube having a transverse opening at one end and an opening remote therefrom for the free escape of air passing through the tube from the said one end, a wall extending across the transverse opening and having a substantially straight free edge substantially bisecting the opening, the wall covering approximately one-half of the opening, and an elastic member mounted under tension across the other approximately one-half of the opening not covered by said wall, the member having a substantially straight free edge extending substantially parallel to the free edge of the wall and approximately bisecting the opening whereby the free edge of the wall approaches but does not overlap the free edge of the elastic member, permitting the latter to flex inwardly and outwardly of said opening. This decoy device may be also characterized by a pair of concentric rings used to retain the elastic member under proper tension, so that when activated a sound is emitted, imitative of the call of a wild fowl.

3,811,222
SWINGING DOORS

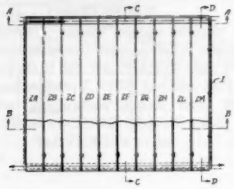
George J. Economou, 8 Elm St., Norton, Mass.

Continuation-in-part of Ser. No. 109,788, Jan. 26, 1971, Pat. No. 3,726,044. This application Dec. 8, 1971, Ser. No. 205,947
Int. Cl. E01f *13/00*
U.S. Cl. 49—9 **25 Claims**



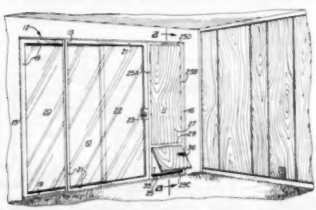
A swinging door comprising a vane supported about an axis, wherein the vane comprises a first portion of predetermined width and a second portion of greater predetermined width. The first portion is attached to the second portion so as to make a predetermined angle therewith of between 90° and 175° and the axis is adjoined within the first portion or is in the region of the plane of the second portion.

3,811,223
HATCH COVERS
Yuko Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Nihon Hatch Cover Kenkyusho, Tokyo, Japan
Filed Feb. 28, 1972, Ser. No. 229,684
Claims priority, application Japan, Mar. 12, 1972, 47-13076
Int. Cl. E05d *15/26*
U.S. Cl. 49—127 2 Claims



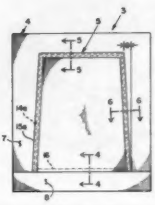
A hatch cover including a multiplicity of relatively narrow cover panels of L-shaped cross-section which are laid over a hatch coaming having a panel storing station at one end thereof, with their longer legs placed side by side horizontally thereon and with their shorter legs depending as skirt portions in hatch closing position. A scooping support carriage is provided for supporting the weight of all cover panels loaded thereon in superposed manner while scooping up one panel after the other progressively during a movement of the carriage so as to bring them from a hatch closing position to a panel storing position during hatch opening operation, and vice versa. The carriage is provided with cam means for actuating push rod members slidably mounted on each cover panel upwardly so as to elevate an adjoining cover panel at a level higher than that of the former panel as a first move for bringing the latter panel into superposed condition over the former panel, in addition to another cam means for holding all of the cover panels loaded thereon in superposed condition one above the other.

3,811,224
PET DOOR PANEL
Elbert W. Garrison, P.O. Box 536, Cave Creek, Ariz.
Filed June 7, 1973, Ser. No. 367,773
Int. Cl. E05d *15/48*
U.S. Cl. 49—168 4 Claims



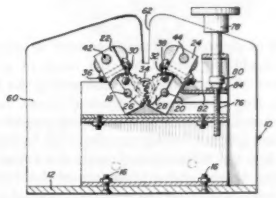
An ornamental pet door panel which may be utilized in association with a conventional sliding glass or arcadia type door having a normally covered opening to provide egress and ingress facilities for the family pet.

3,811,225
SLIDABLE DOOR FASTENER FOR WEATHERPROOF HOUSING
James R. Stewart, San Jose, Calif., assignor to GTE Lenkurt Incorporated, San Carlos, Calif.
Filed Nov. 1, 1972, Ser. No. 302,965
Int. Cl. E06b *3/32*
U.S. Cl. 49—463 3 Claims



Similarly shaped curved surfaces on projecting edges of the top and sides of a door and an opening in a housing mate together to form an essentially watertight seal around the top and sides of the opening when the door is slidably mounted on the housing. The spacings between the side edges at the bottom of the door and opening are less than those at the tops thereof to facilitate slidably removing the door from the housing without raising the door to its full height.

3,811,226
KNIFE GRINDING AND HONING MACHINE
Fred R. Gangelhoff, 1691 Lake Ave., Largo, Fla., and Harry A. Beyer, 2096 U.S. 19 S., Lot 1423, Clearwater, both of Fla.
Filed Dec. 19, 1972, Ser. No. 316,554
Int. Cl. B24b *3/00*, *9/00*
U.S. Cl. 51—80 R 9 Claims

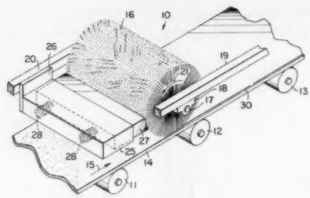


A pair of generally parallel shafts are supported from a base for simultaneous and equal inverse lateral shifting toward and away from each other and the shafts each include a plurality of grinding wheels mounted thereon for rotation therewith. The grinding wheels of one shaft may be overlapped in relation to the grinding wheels of the other shaft as the shafts are shifted toward each other and spring structure is provided and yieldingly urges the shafts toward each other. Adjustable abutment structure is provided for limiting movement of one of the shafts toward the other and a rotary motor is drivingly connected to the shafts for equally rotating the latter in opposite directions.

3,811,227
METHOD AND APPARATUS FOR CLEANING

Albert V. Petrik, 2866 Joyce Rd., Roslyn, Pa.

Continuation-in-part of Ser. No. 160,761, July 8, 1971, abandoned. This application May 16, 1973, Ser. No. 360,731
Int. Cl. B24b 1/00, 57/00
U.S. Cl. 51—16 8 Claims

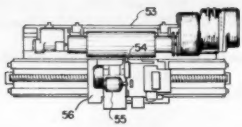


A method and apparatus wherein workpiece is cleaned with a metallic material by abrading the cleaning material from the source, collecting the abraded material, and abrading the workpiece with the collected material.

3,811,228
METHOD AND APPARATUS FOR CONTROLLING THE ACCURACY OF MACHINING OF A MACHINE TOOL

Kazuo Nagashima, and Tadahiro Ono, both of Numazu, Japan, assignors to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 213,112
Claims priority, application Japan, Dec. 29, 1970, 45-130284; Dec. 29, 1970, 45-130285
Int. Cl. B24b 5/00
U.S. Cl. 51—49 6 Claims

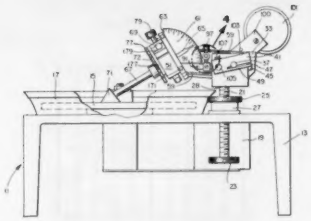


A method of controlling a machine tone to improve the accuracy of machining which has the steps of detecting the cutting power of a machine tool, comparing the value of the detecting cutting power with a predetermined value of a in-feed power, and controlling the cutting speed of the tool driven by an electric motor so that the in-feed speed is hastened when the difference of both the values of the detected cutting power and a predetermined cutting power is within a predetermined range and the value of the detected cutting power is larger than that of the predetermined cutting power, while the in-feed speed is lessened when the value of the detected cutting power is smaller than that of the predetermined cutting power so as to compensate the wear of the tool. This method is performed by an automatic grinding machine of a roll grinding machine which has a mechanism for compensating the wear of a grinding wheel, a mechanism for compensating the resilient deformations of a grinding wheel, wheel station and roll for controlling the position of the wheel station, means for rotating an electric motor for in-feeding the grinding wheel to cut in normal or reverse direction so as to increase or decrease the cutting, and means for controlling the rotation of the electric motor so as to be proportional to the amplitude of a signal obtained by the in-feed speed of the grinding wheel for compensating the resilient deformation of the grinding wheel, wheel station and roll.

3,811,229
GEM FACETER

Earl D. Montgomery, Warrington, Pa., assignor to The American Standard Corporation, Trevose, Pa.

Filed Mar. 5, 1973, Ser. No. 338,406
Int. Cl. B24b 7/22, 9/16
U.S. Cl. 51—125 10 Claims

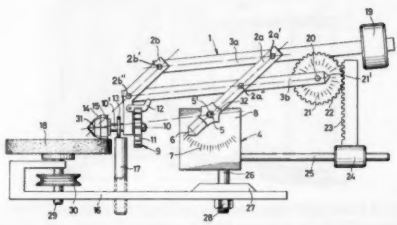


A gem faceter comprising a pivot block which is vertically movable to various positions, a pivot arm pivotally mounted at one end to the pivot block, a head mounted to the other end of the pivot arm and adapted for movement to various positions about a pivot pin, a dop mounted in said head and adapted to be rotated about its axis to various positions, an index plate fixedly mounted on said dop and having markings thereon which indicate the number and position of desired facets to be ground on a gem held by the dop, an index plate clamp for locking the index plate successively in said desired marked positions relative to the head for grinding the desired facets, a lapping table adapted to be contacted by the dopped gem, a protractor for continuously indicating the angular position of the dop relative to the vertical, an adjustable stop for limiting the movement of the head toward the lapping table, a sensor mounted on the stop for sensing the degree of movement of the head toward the lapping table, an electronic circuit for translating the degree of movement sensed by the sensor into an electronic signal, and a visual indicator for indicating the value of the electronic signal and the degree of said movement, whereby the faceting angle may be detected and duplicated with great precision.

3,811,230
FACET GRINDING APPARATUS

Alexander Beck, Forrigel CH-8113, Boppelsen, Switzerland

Filed June 16, 1972, Ser. No. 263,428
Claims priority, application Switzerland, June 30, 1971, 9586/71
Int. Cl. B24b 9/16
U.S. Cl. 51—127 19 Claims



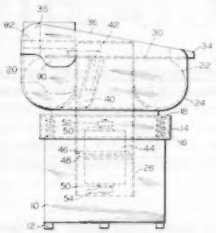
An apparatus for grinding facets in a workpiece has a parallelogram lever arrangement. The workpiece is mounted on one arm of a parallel set of arms of the lever arrangement, while the other arm of the set is pivotally mounted on a sta-

tionary support member. Means are provided for selectively adjusting the angular position of the workpiece about its support arm, and further means are provided for selectively adjusting the angular position of the other parallel arm about the pivot on the support member.

3,811,231
SELF-SEPARATING VIBRATORY FINISHING APPARATUS

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagoya, Aichi, Japan

Continuation-in-part of Ser. No. 787,534, Dec. 27, 1968. This application Nov. 2, 1970, Ser. No. 86,161
Claims priority, application Japan, Dec. 28, 1967, 42-84917; Apr. 20, 1968, 43-32278; May 10, 1968, 43-38696
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 **7 Claims**



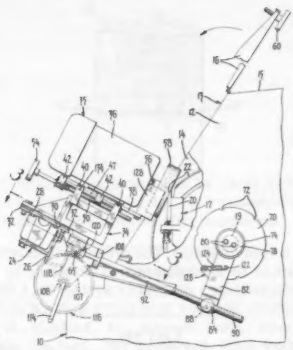
A self-separating vibratory finishing apparatus has an annular trough which is vibrated by a reversible motor having two eccentric weights, one of which leads or lags the other weight by a controlled angle automatically during rotation in each sense of rotation. A mass made up of workpieces and abrasive material effects a helical shifting motion in the direction opposite to the direction of motor rotation so that workpieces are surface finished. For separation purposes, a flap is moved downwardly into the mass in a direction so that the mass pushes it down. The mass overflows the flap onto a sieve, being aided by a flash gate having a special shape vertically positioned in the flowing mass upstream of the flap. The trough can also be helical and have a plurality of such gates disposed at intervals along the helical trough to permit the mass to ascend the trough for separation purposes.

3,811,232
KNIFE EDGE GRINDER FOR ROTARY REEL TYPE CUTTER HEAD

Floyd W. Reuter, Dearborn Heights, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed July 10, 1972, Ser. No. 270,410
Int. Cl. B24b *3/42, 19/00, 5/18*
U.S. Cl. 51—249 **4 Claims**

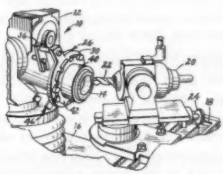
A knife edge sharpener is permanently mounted on a harvester implement having a reel type cutter head for selective sharpening of the knife edges of the cutter head. The sharpener unit is mounted for longitudinal movement along the cutter head and an indexing mechanism is incorporated for engagement with the rotary drive means of the cutter head in correspondence with longitudinal movement of the sharpener along the cutter head.



3,811,233
QUICK CHANGE GUARD FOR TOOL AND CUTTER GRINDER

Clyde Richard Eby, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 2, 1972, Ser. No. 303,005
Int. Cl. B24b *55/04*
U.S. Cl. 51—269 **4 Claims**



A quick-change guard for a machine tool supporting a rotating tool the guard having a backplate located perpendicular to the axis of and to the rear of the rotating tool and a ring releasably secured to the backplate, the ring encircling the tool and containing a shield extending therefrom to enclose a substantial portion of the rotating tool.

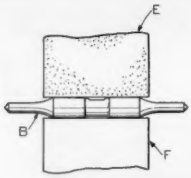
3,811,234
METHOD OF FORMING WORKPIECES BY ABRADING

Edward W. Soares, Jr., New Bedford, Mass., assignor to Gulf & Western Precision Engineering Company, Manchester, Mass.

Filed Oct. 19, 1972, Ser. No. 298,940
Int. Cl. B24b *3/06, 5/22*
U.S. Cl. 51—323 **6 Claims**

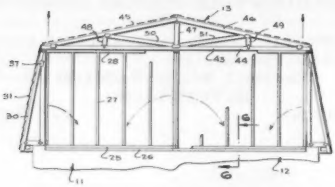
A peripheral recess is formed in a cylindrical mounting portion of a metal workpiece. A flat is then formed in the

peripheral recess. A set screw is adapted to bear against the flat when the mounting portion is positioned in a chuck. The



workpiece is then hardened. The cylindrical mounting portion is then finished to a predetermined diameter by centerless grinding.

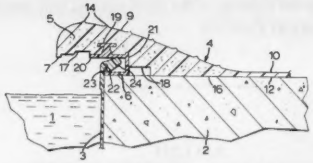
3,811,235
PREFABRICATED MULTI-STORY STRUCTURE
John Dillard Powell, Ridgeway, Va., assignor to Continental Homes Incorporated, Boones Mill, Va.
Filed Jan. 26, 1971, Ser. No. 109,836
Int. Cl. E04b *1/344, 1/348, 1/36*
U.S. Cl. 52—69 **1 Claim**



A prefabricated building structure generally consisting of at least two modular units rigidly secured together to provide an integral structure, each of the modular units including a permanently constructed lower story section, and a collapsible upper story section mounted on the lower story section, the upper story section including at least one interior junction wall hingedly connected to the lower story section and movable between an inoperative, substantially horizontally disposed position, and an operative, substantially vertically disposed position, in abutting relation with an interior junction wall of the upper story section of the other modular unit, disposed in its operative position, and exterior walls hingedly connected to the lower story section and movable between inoperative, substantially horizontally disposed positions, and operative, substantially vertically disposed positions, and a roof section mounted on the upper story sections when the interior and exterior wall thereof are disposed in their operative positions.

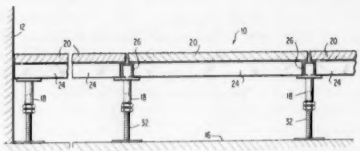
3,811,236
SWIMMING POOL COPING
Derek Edward Fiddes, Willowdale, Ontario, Canada, assignor to Protective Plastics Limited, Don Mills, Ontario, Canada
Filed Sept. 5, 1972, Ser. No. 286,062
Int. Cl. E04h *3/16*
U.S. Cl. 52—102 **6 Claims**

A protective coping member for a swimming pool is of composite construction, comprising a rigid moulded body of fibre-reinforced plastic material, having an outer skin defining a wear surface, and a retainer member constituted by an aluminum extrusion having a keyed upper portion which is em-



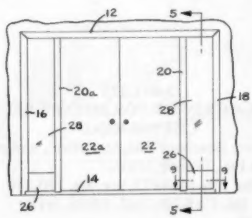
bedded in the moulded body and a flanged lower portion defining a longitudinally extending channel to retain a swimming pool liner.

3,811,237
RAISED FLOOR PANEL AND ASSEMBLY
James H. Bettinger, Elkridge, Md., assignor to United Fabricating Company, Inc., Elkridge, Md.
Continuation-in-part of Ser. No. 23,531, March 30, 1970, Pat. No. 3,681,882. This application Aug. 7, 1972, Ser. No. 278,465. The portion of the term of this patent subsequent to Aug. 8, 1989, has been disclaimed.
Int. Cl. E04b *5/43*
U.S. Cl. 52—126 **13 Claims**



Disclosed is a raised floor panel and panel assembly for computer and similar installations. The panels are supported above a subfloor on pedestals and are easily installed and removed for later access to the space beneath the floor. Each panel comprises a core with or without strengthening metal sheets about which is wrapped a flexible and at least partially resilient floor covering, such as carpet or flexible tile material. In one form, the floor covering extends over the edges and for a short distance beneath each panel. In another form, a sheet metal pan underlies the core and has upturned flanges in contact with the outer face of the floor covering extending over the edges of the core.

3,811,238
STEEL SIDELIGHT FRAME
John H. Brinker, Cincinnati, Ohio, assignor to American Standard Inc., New York, N.Y.
Filed July 11, 1972, Ser. No. 270,788
Int. Cl. E06b *1/22*
U.S. Cl. 52—204 **7 Claims**



A knockdown entrance door unit, especially for residential installation, wherein sidelight panels are arranged at one or

both sides of the door. The entrance unit includes a low profile sill that spans the entire space between the side jambs. The unit is made as a knockdown structure to reduce shipping expense and possibility of damage during transit to the job site.

3,811,239

INSULATING FLEXIBLE COMPOSITE ELEMENT

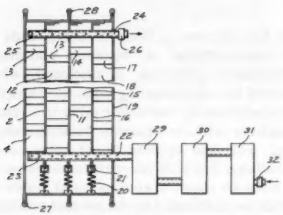
Otto Alfred Becker, Robert-Koch-Strasse 59, Saarbruecken, 66/6 Germany

Filed Mar. 18, 1971, Ser. No. 125,549

Claims priority, application Germany, Mar. 19, 1970, 2013115; Feb. 19, 1971, 2108110

Int. Cl. E04b *2/28*; **E04c** *2/34*

U.S. Cl. 52—406 **4 Claims**



An improved heat and cold insulating flexible composite element comprises at least one radiation chamber with walls of flexible material having reflecting surfaces. Opposite walls of said chamber are resiliently spaced from each other by suitable spacing elements. Preferably the chambers are enclosed by an envelope which may also be formed of flexible reflecting sheets.

3,811,240

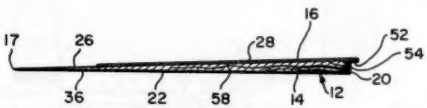
REINFORCED ALUMINUM SHINGLE

Armand J. Horny, 7518 Tabor Rd., Philadelphia, Pa.

Filed May 30, 1972, Ser. No. 257,815

Int. Cl. E04d *1/06, 1/28*

U.S. Cl. 52—560 **1 Claim**



A reinforced aluminum shingle which comprises in combination a tapered cedar wood backing and a covering of reinforced aluminum sheet which is cemented to a portion of the surface of the cedar backing. The reinforced aluminum sheet overhangs the thicker edge of the backing in a lip to provide an air gap upon installation which acts to prevent the entrance of water under the shingle.

3,811,241

CONCEALED CORNER LOCKING CLIP

Jacob M. Mattix, 341 N. Hennessy, New Orleans, La.

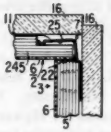
Division of Ser. No. 61,194, Aug. 5, 1970, Pat. No. 3,688,459.

This application Sept. 1, 1972, Ser. No. 285,620

Int. Cl. F16b *5/06*

U.S. Cl. 52—760 **8 Claims**

A concealed corner lock clip system for installing and securing sheet material such as laminated plastic wallboards, plywood and the like for finishing off bathtub and/or shower walls and the like; the locking system includes a vertically extending resilient clip attached to one wallboard and into which



the other, adjacent wallboard can be easily and quickly inserted and locked into place; the clip is unobstrusive and compact and is completely invisible after installation.

3,811,242

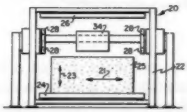
METHOD AND APPARATUS FOR COMPRESSING FOAM BLOCKS FOR STORAGE AND/OR SHIPMENT

William H. Hayford, Jr., Summit Point, Ringwood, N.J.; Theodore Hayford, 204 Boulevard, Glen Rock, N.J., and Donald S. Hayford, 26 Park Pl., Paramus, N.J.

Filed Dec. 15, 1972, Ser. No. 315,614

Int. Cl. B65b *63/02*

U.S. Cl. 53—24 **12 Claims**



Method and apparatus for the compression and restraint of blocks of polyurethane foam or similar material to a small percentage of their original volume to reduce shipping and storage space. The blocks are compressed initially in the direction of at least one of the axes and are restrained in the direction of one of the other axes. Then, a restraining sleeve or a plurality of restraining bands holds the block in the compressed condition in the direction of the compressed axis and also prevents rebound or expansion in all directions of compression.

3,811,243

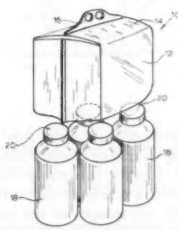
METHOD OF ASSEMBLING MULTI-PACKAGING DEVICES TO ARTICLES

Ernest R. Cunningham, Libertyville, Ill., assignor to Grip-Pak Inc., St. Louis, Mo.

Filed Mar. 31, 1972, Ser. No. 240,041

Int. Cl. B65b *53/00*

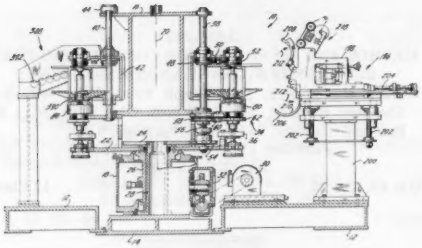
U.S. Cl. 53—30 **5 Claims**



A method for assembling stretchable and elastic multipackaging devices to articles is disclosed wherein the stretchable and elastic multi-packaging device is positioned over at

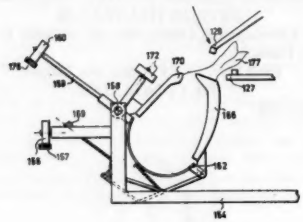
least one pair of adjacent articles, the articles are moved apart from one another to stretch the multi-packaging device and allow at least one other article to be inserted therebetween, and the spaced apart articles are then released to allow the multi-packaging device to grip the articles together as a group.

3,811,244
HOSE WINDING AND PACKAGING MACHINE
Richard J. Killen, Manchester, Mo.; Boyce Brandom, Ridgewood, and Lyman S. Howard, Bergenfield, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 22, 1971, Ser. No. 210,736
Int. Cl. B65b *13/14, 63/04*; **B65h** *54/28*
U.S. Cl. 53—116 **19 Claims**



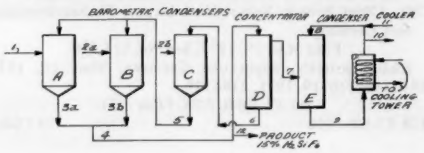
A wholly automated hose winding and packaging machine that severs a predetermined running length of elongate material into a neat package, ties the package and strips same from the machine proper.

3,811,245
DEVICE FOR CLOSING A BAG
Jacob Hendrik Mosterd, En Merkenbureau De Wit N. V., 11 Surinamestraat, The Hague, Netherlands
Filed Sept. 11, 1972, Ser. No. 287,791
Claims priority, application Netherlands, Sept. 10, 1971, 7112520
Int. Cl. B65b *63/00, 63/02*
U.S. Cl. 53—124 A **3 Claims**



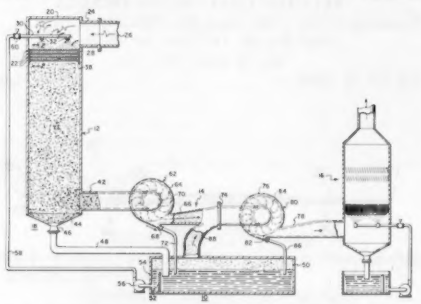
The invention provides an apparatus for automatically retaining a filled bag by means of controlled flaps. The retaining apparatus is further pivotably mounted, enabling cooperating with closure means which preferably consists of a twisting device. The advantages of the invention are that a better modelling of the closed bag is possible, that the controlled flap not only retains the bag, but in many instances maintains the shape of the filled bag in a desired way and that the bag closure may be located at a desired location of the bag.

3,811,246
CLOSED LOOP SYSTEM FOR THE ELIMINATION OF FLUORINE POLLUTION FROM PHOSPHORIC PLANTS
William R. Erickson, P.O. Dwr. 1496, Bartow, Fla.
Filed Jan. 16, 1973, Ser. No. 324,227
Int. Cl. B01d *53/00*
U.S. Cl. 55—71 **7 Claims**



A process for recovering fluorine compounds from the evaporative concentration of aqueous phosphoric acid, without atmospheric pollution, is disclosed, wherein the vapors produced by concentrating aqueous phosphoric acid solution are condensed by contacting same in a system closed to the atmosphere with an aqueous fluorine-compound-absorbing liquid, with said aqueous liquid being cooled by indirect heat exchange and then recycled to condense additional vapors. The prior art required cooling water ponds or the like and such ponds are eliminated by the present process, with the consequential elimination of fluorine pollution of the atmosphere.

3,811,247
FOAM TYPE GAS SCRUBBER
Glen P. Huppke, Land O' Lakes, Fla.
Continuation-in-part of Ser. No. 190,893, Oct. 20, 1971. This application May 8, 1972, Ser. No. 251,440
Int. Cl. B01d *19/02*
U.S. Cl. 55—178 **10 Claims**



A wet foam type gas scrubber for cleaning industrial gases and the like comprising foam generating means including a chamber having an inlet for gas and an outlet for foam. Grid means is provided in said chamber between said inlet and outlet and extending transverse to the gas flow therebetween for dividing the gas flow into a pluraltiy of separate streams. Said grid means comprises a plurality of elongated strips interconnected to form a plurality of discrete flow passages and the strips have thin, knife-like edges facing into the direction of gas flow for dividing the same into separate streams. Means is included for wetting said grid means with liquid foaming agent to generate a mass of moving, liquid film, foam bubbles enveloping small discrete volumes of said gas therein. Foam breaker means using gravity and centrifugal force is provided to collapse and break down the foam bubbles into liquid and release the cleansed gas therefrom.

3,811,248

APPARATUS FOR REVERSING THE CONVEYING-AIR IN PNEUMATIC SUCTION-CONVEYING INSTALLATIONS

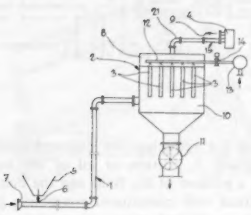
Adolf Lesk, Osterburken; Rudolf Baumann, Rosenberg, and Otmar Link, Osterburken, all of Germany, assignors to Adolf Zimmermann Maschinenbau, Osterburken, Germany

Filed Apr. 7, 1972, Ser. No. 242,075

Claims priority, application Germany, Apr. 24, 1971, 2120189; Apr. 24, 1971, 7115943

Int. Cl. B01d *19/00*; F16k *11/00*

U.S. Cl. 55—272 7 Claims



Pneumatic suction-conveying installations for reversing the air flowing through a separator for the conveyed material, in which a hose switch is arranged between a conduit leading from the separator to the blower providing the suction effect and a suction union and delivery union of the blower.

3,811,249

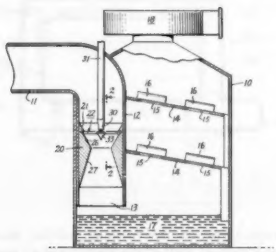
GAS WASHING DEVICE WITH REVERSING SPRAY PATHS

Orlan M. Arnold, Norwalk, and Carlo A. Vancini, Stamford, both of Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,692

Int. Cl. B01d *47/06*

U.S. Cl. 55—84 10 Claims



Gas washing apparatus including a gas duct and an axial spray nozzle adapted to produce a radial spray. The duct includes a ring having an annular recess shaped to receive and reverse the direction of the spray particles with a minimum loss in kinetic energy. The spray particles are reversed in direction a plurality of times to pass repeatedly through the gas stream until their kinetic energy becomes expended. The spray may or may not be used in conjunction with a venturi throat in the duct.

3,811,250

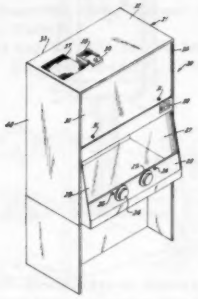
CONTAMINATION CONTROL APPARATUS

James McFarland Fowler, Jr., Albuquerque, N. Mex., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 208,454, Dec. 15, 1971, which is a continuation of Ser. No. 839,967, July 8, 1969, abandoned. This application Apr. 25, 1973, Ser. No. 354,217

Int. Cl. B01d *31/00*

U.S. Cl. 55—274 8 Claims



The contamination control apparatus of this invention includes a hollow cabinet having a work area in one portion thereof and an opening therein permitting access to the work area from the exterior of the cabinet. Decontamination and air supply means are in the cabinet and positioned so that air discharge therefrom will be decontaminated and then passed into the work area. Diffusion means are mounted in the cabinet and positioned between the decontamination and supply means and the work area to facilitate the diffusion of the air as it enters the work area. Consequently, the air flows uniformly through the work area and assist in providing a clean air curtain over the access opening to the work area to facilitate the prevention of contaminated air from leaving or entering the work area through the access opening. A series of interconnected air plenum chambers are in the cabinet in communication with the work area, decontamination and air supply means, and the opening to the exterior of the cabinet to permit the air passing through the work area and a portion of air from outside of the cabinet to be directed to the decontamination and air supply means. Negative pressure reducing means are in the cabinet to direct a predetermined amount of decontaminated air out of the cabinet sufficient to maintain a lesser pressure within the cabinet and exteriorly thereof and, finally, air velocity indicator and control means are mounted on the cabinet to facilitate the control of air flow within the cabinet.

3,811,251

CLASSIFYING MUFFLER

Stephen J. Gibel, 5846 Edgerton Rd., North Royalton, Ohio

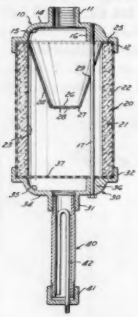
Filed Aug. 25, 1971, Ser. No. 174,860

Int. Cl. B01d *50/00*

U.S. Cl. 55—276 10 Claims

Muffler for classifying and separating entrained oil and water from exhaust air of pneumatic devices. Exhaust air is led into a relatively unrestricted expansion chamber and passes into a silencing chamber through a collector against which droplets of entrained liquid and condensed vapors impinge.

The relatively liquid-free air is diffused through the porous side of the silencing chamber. Impinged droplets collect to allow liquid to fall to base of silencing chamber in drops sufficiently large to prevent re-entrainment. Base of silencing chamber provided with means to permit draining, which may be automatic.



3,811,252

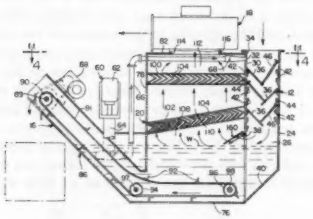
AIR CLEANING DEVICE

Dewey M. Evans, Farmington, and Willard L. Johnson, Huntington Woods, both of Mich., assignors to Devansco, Inc., Huntington Woods, Mich.

Filed Apr. 12, 1972, Ser. No. 243,323

Int. Cl. B01d *47/02*

U.S. Cl. 55—228 **63 Claims**



The air-cleaning device of this invention removes particulate matter from an input air stream, and includes a wash section in which spaced apart air stream baffle members are removably adjustably and pivotally secured to supporting walls, a settling tank, a moisture eliminator section, and a suction fan section. The air stream is damped in the wash section by the baffle members so that when it passes through the moisture eliminator section, its velocity is of an order that will no longer carry particulate matter except of an extremely fine size, i.e., the particulate matter has been substantially entirely removed by the device when the air stream has cleared through the moisture eliminator section. By baffle damping the air stream flow in the wash section, the suction fan operates at full capacity and without dampering.

3,811,253

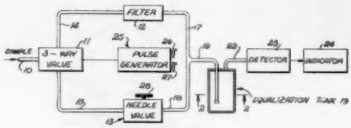
APPARATUS FOR THE CONCENTRATION REDUCTION OF A GAS STREAM

Robert R. Austin, Pasadena, and David M. Creighton, Hacienda Heights, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 26, 1970, Ser. No. 40,671

Int. Cl. B01d *53/04*; G01n *31/00*

U.S. Cl. 55—270 **10 Claims**



An apparatus for reducing the concentration of a constituent in a fluid. A portion or all of the constituent is removed from a portion of the fluid and the constituent free portion is remixed with constituent containing portion. In a flowing system, a limited range electrolytic titrator may analyze the mixed output when the input concentration varies over a very large range. The apparatus of the invention may include a three way valve to pass the input thereto either through a filter or through a bypass. The three way valve may be a solenoid valve operated by a pulse generator. A needle valve may be employed in the bypass, but need not be employed at all in many cases. If a single conduit from where the filter and bypass outputs join is not fairly large or long, preferably a mixing tank or other mixing device is provided.

3,811,254

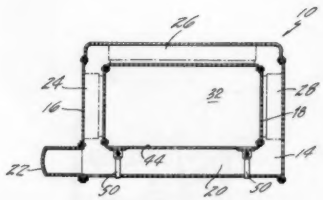
ENGINE AIR PARTICLE SEPARATOR WITH FLUID SCAVENGE PUMP

Armand F. Amelio, Yonkers, N.Y., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 8, 1972, Ser. No. 251,490

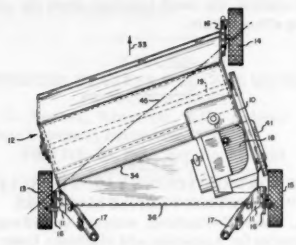
Int. Cl. B01d *45/12*

U.S. Cl. 55—306 **8 Claims**



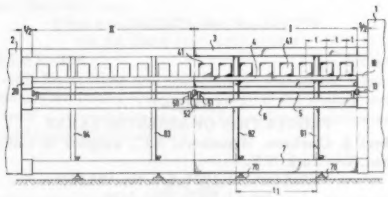
A scavenge pump in the form of tubular member is connected to the bottom wall of the housing of an engine air particle separator and is shaped to define an annular ejector so that as heated fluid is passed through the annular ejector the portion of the scavenge pump nearest the separator is heated by convection to prevent ice formation and the heated air from the ejector is discharged to form a low pressure region in the tubular member and is passed along the inner wall of the tubular member to prevent ice formation thereagainst, thereby permitting the scavenge of liquid and gases, which may be below the freezing temperature in the low pressure region of the separator, to be discharged through said tubular member due to the operation of the scavenge pump.

3,811,255
CROSS-FLOW MOWER WITH CANTED REEL AND THREE-WHEEL SUSPENSION
Hugo S. Ferguson, Averill Park, N.Y., assignor to Reel Vortex, Inc., Poestenkill, N.Y.
Continuation-in-part of Ser. No. 783,192, Dec. 12, 1968, Pat. No. 3,673,773. This application June 30, 1972, Ser. No. 268,072
Int. Cl. A01d 55/20
U.S. Cl. 56—13.3 6 Claims



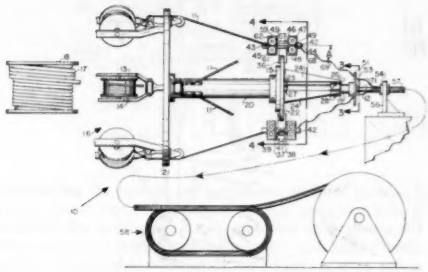
In a lawn mower of the cross-flow blower type, employing a cylindrical reel with helically curved cutting blades in a blower conduit, the reel and adjacent portions of the conduit are mounted with the reel axis canted in the horizontal plane at an angle with respect to a perpendicular to the normal direction of travel of the mower which is approximately equal to the helix angle of the blades and in a direction such that tangents to the helix of the blades in the lowermost positions thereof are approximately perpendicular to the normal direction of travel of the mower. The mower carriage is provided with three wheels, one of which is mounted behind the rearward end of the canted reel and at least partially laterally inside the lateral position of the rearward end of the reel. The other two wheels are mounted in forward and rearward positions on the other side of the carriage.

3,811,256
SPINNING MACHINE
Bruno Bystron; Eberhard Grimm, both of 8070 Ingolstadt, and Rudolf Oexler, 8071 Oberbrunnenreuth, all of Germany, assignors to Schubert & Salzer Machinenfabrik Aktiengesellschaft, Ingolstadt, West Germany
Filed Apr. 18, 1973, Ser. No. 352,130
Claims priority, application Germany, Apr. 25, 1972, 2220228
Int. Cl. D01h 7/10
U.S. Cl. 57—1 R 5 Claims



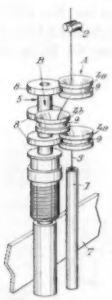
A rigid frame for a composite spinning machine having a plurality of equal longitudinal sections, each section having a plurality of spinning stations, is formed by providing in each section a pair of upright walls spaced apart a distance equal to one-half the section length and spaced inward from the section ends a distance equal to one-fourth of such length. To the outer edges of such walls are connected longitudinal members spaced elevationally and extending the full machine length, which members also form benches for supporting bobbins, spool containers and other spinning apparatus. Common drive shafts for spinning station elements extending the full machine length are formed by section length shafts being connected together by rigid couplings and mounted in a plurality of spaced bearings supported on the longitudinal members.

3,811,257
METHOD AND APPARATUS FOR APPLYING ARMOR TAPE
Harvey Burr, Bronxville, N.Y., assignor to The Anaconda Company, New York, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,637
Int. Cl. H01b 13/26, 13/08
U.S. Cl. 57—9 12 Claims



Stiff armor strip for a cable core is pretwisted between two pairs of heavy rolls on the armoring machine and bent sharply at the downstream roll. Double bending of the strip is avoided.

3,811,258
TWISTING DEVICES FOR FILAMENTS, ESPECIALLY FOR TEXTILE FILAMENTS
Guy Batsch, Aubenas, France, assignor to Societe Civile Textile dite Socitex, Lyon, France
Filed Sept. 24, 1971, Ser. No. 183,503
Claims priority, application France, Oct. 1, 1970, 70.35548
Int. Cl. D02g 1/04; D01h 7/92
U.S. Cl. 57—34 HS 7 Claims



The device has several rotary rings against which the filament must be applied so as to be driven in rotation by the inner edge of the said rotary rings to undergo twisting. These rotary rings, being staggered along a rectilinear path and distributed in two groups, which overlap so that in following the rectilinear path there is encountered alternately a ring of one

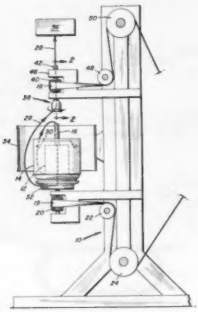
group and a ring of the other group. These two groups can undergo relative displacement in a plane perpendicular to the rectilinear path. The rings of the two groups are urged against a single drive roller driving the said rings, and the relative displacement of the two groups is effected by pivoting around the axis of this single drive roller.

3,811,259

GUIDE MEANS FOR TWO FOR ONE TWISTING DEVICE

Philip R. Petersen, 1427 Hartford Ave., Charlotte, N.C.

Filed June 21, 1971, Ser. No. 154,978
Int. Cl. D01h *1/10*
U.S. Cl. 57—58.83 **6 Claims**



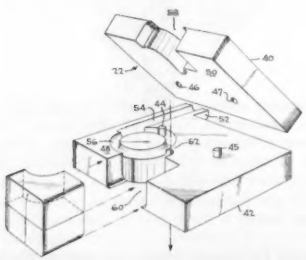
An improved two for one yarn twisting machine having a guide means rotatably mounted between the yarn package and the take-up means. The guide means has a pin or pins and a roller or rollers around which the yarn is looped and is rotated in the same direction and at the same speed as the twister balloon to control friction in the yarn linear movement, consequently decreasing yarn tension and enabling the use of higher linear speeds.

3,811,260

DEVICE FOR THE PRODUCTION OF FALSE TWISTED YARNS

Gabriel Obayon, Lyons, France, assignor to Rhone-Poulenc Textile, Paris, France

Continuation-in-part of Ser. No. 152,733, June 14, 1971, Pat. No. 3,724,040. This application Dec. 7, 1971, Ser. No. 205,553
Int. Cl. D02g *1/04*
U.S. Cl. 57—77.3 **11 Claims**



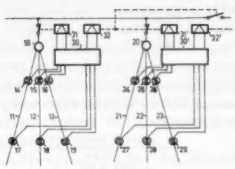
A device for the production of false twisted yarns which includes a first plate having a passage for the yarn therethrough; a second plate having a passage for the yarn therethrough aligned with the passage of the first plate and a surface in abutting relation to a surface of the first plate; and at least one curved conduit defined by recesses in at least one of the abutting surfaces of the first and second plates, such conduit communicating with the passages through the first and second plates. Means is provided to hold the yarn in a substantially constant position when traveling through the passages of the first and second plates and the curved conduit converges substantially tangentially toward such means to hold the yarn in place. When a rapidly moving fluid, e.g., air, is passed through the curved conduit, the same impinges upon the yarn and a false twisting effect occurs.

3,811,261

SYSTEMS FOR MONITORING YARNS IN MULTICOIL PRODUCTION TEXTILE MACHINES

Ernst Felix, Uster, Switzerland, assignor to Zellweger, Ltd., Uster Factories for Apparatus and Machines, Uster, Switzerland

Filed June 9, 1972, Ser. No. 261,409
Claims priority, application Switzerland, June 10, 1971, 8437/70
Int. Cl. D01h *13/16*
U.S. Cl. 57—81 **7 Claims**



A circuit for monitoring yarns in multicoil production machines in the textile industry wherein the outputs of a plurality of feelers associated with respective yarns are logically analyzed to detect respective yarn break conditions and suitably control the operation of individual coils or the entire machine.

3,811,262

PRODUCTION OF ASBESTOS YARNS

Robert J. Clarkson, Winnsboro, S.C., assignor to Uniroyal, Inc., New York, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,979
Int. Cl. D02g *3/04, 3/20*
U.S. Cl. 57—140 BY **23 Claims**

In the production of drafted lightweight, high strength asbestos yarn with good strength, uniformity and weaving properties, the occurrence of breaks during drafting and the resultant waste of materials, labor and time are minimized by incorporating an undrawn continuous filament yarn, made of a drawable synthetic polymeric fiber, in each narrow strand or sliver of blended asbestos and staple textile fibers formed from

the web thereof emanating from the card and just prior to the entry of the strands into the rub apron system where each strand is compacted and formed into a roving. The filament yarn thus constitutes a base for the asbestos and textile fibers and, by virtue of its drawability, can stretch with the roving during the subsequent drafting thereof and hold the fibers together. The draw ratio of the filament yarn should be approximately the same as, and preferably is slightly greater than, the draft ratio of the asbestos fiber roving. This abstract is not to be taken as either a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,811,263

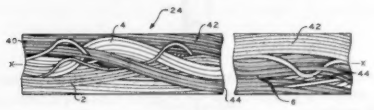
NON-TWISTED, HEATHER YARN AND METHOD FOR PRODUCING SAME

Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 23, 1972, Ser. No. 228,626

Int. Cl. D02g *3/22, 1/16, 1/20*

U.S. Cl. 57—140 R **15 Claims**



A non-twisted, heather yarn is formed of a plurality of major yarn bundles at least one of which is of a substantially different color from the remaining bundles. Each major yarn bundle is formed of a multiplicity of continuous filaments and has from about 10 to about 90 percent of its filaments cohering to form secondary bundles with the remaining filaments of each major bundle varying in number along the length of the yarn, being interlaced with other major bundles of the yarn, and being randomly located about the yarn axis. Each of the secondary bundles in each unit length of the yarn of about 6 inches has a secondary bundle portion formed of greater than about 30 percent of the filaments of its major bundle and each of the secondary bundles in each unit length of yarn of about 8 inches is non-uniformly, differently oriented relative to the yarn axis.

3,811,264

YARN CREELING AND TRANSFERRING PROCESS

Charles Alonzo Jones; Jerry Joe Lawson, and William Carl Mayrose, all of Shelby, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed Apr. 10, 1972, Ser. No. 242,775

Int. Cl. D01h *1/22, 1/30, 15/00*

U.S. Cl. 57—159 **5 Claims**

Process for creeling and transferring (joining the terminal portion of yarn from a first yarn package to the leading end of yarn from a second yarn package) in order to continuously draw and texture undrawn yarn.

3,811,265

CODED TIME INDICATING TRANSMISSION SYSTEM

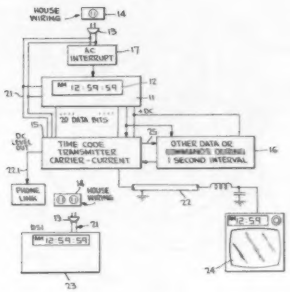
John P. Cater, 3519 Fallen Leaf Ln., San Antonio, Tex.

Filed Jan. 17, 1973, Ser. No. 324,397

Int. Cl. G04c *13/02*

U.S. Cl. 58—24 R **19 Claims**

Time indicating signals are transmitted from a master clock at a central station to a slave clock at a peripheral station via a two-wire line as binary values represented by pulsed duration modulated signals. Clock, coding and transmitting circuitry at the central station are normally energized by an a.c. power line source. In the event of failure of the a.c. power source, the clock is energized by a battery and transmission from the central station to the remote station ceases. On resumption of power, the first transmission from the central station to the peripheral station enables the slave clock to provide a correct time indication. Transmission can be over any existing lines in-



terconnecting the central and peripheral stations, such as a 60-cycle power line, television cable, or a telephone link. If television cable or 60-cycle line is employed, the presence and absence of voltage is indicated by frequency shift keying transmission. Transmission of the time indication requires only a fraction of the total transmission time, and is constant for all time indications, whereby other data signals can be transmitted between the central and peripheral stations.

3,811,266

CALENDAR TIMEPIECE

Hiroyoshi Samura, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,366

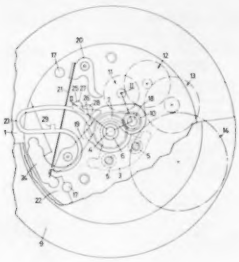
Claims priority, application Japan, Apr. 22, 1972, 47-40721

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **4 Claims**

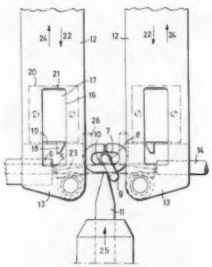
A calendar timepiece, wherein a seven day calendar display having each day of the week arranged on a line with a plurality of calendar date representations arranged in several rows to form a lattice work, positioned in close proximity to said day calendar display. Also provided are a plurality of indicating members, adapted to be commonly driven by movement of the timepiece to advance a step each complete day.

3,811,267
WATCH MOVEMENT AUTOMATIC REWINDING ASSEMBLY WITH ROTATING MASS
Roland Zaugg, and Josef Fluck, both of Grenchen, Switzerland, assignors to A. Schild S.A., Grenchen, Switzerland
Filed Sept. 5, 1973, Ser. No. 394,527
Claims priority, application Switzerland, Sept. 14, 1972, 13487/72; June 15, 1973, 8738/73
Int. Cl. G04b *5/02*
U.S. Cl. 58—82 A **16 Claims**



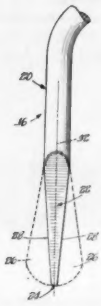
An automatic rewinding device with a rotating mass for use in watch movement, wherein the pinion of the rewinding mass meshes with a setting-wheel mounted on a lever capable of moving in such manner as to cause the setting-wheel to mesh with or free the first wheel-and-pinion of the rewinding gear-train depending on the direction of rotation of the mass, this first setting-wheel being subjected to the action of a pawl, and including a single spring acting on the lever and on the pawl and a movable energizing component which may move from a release position to an engaging position in which latter it will keep the spring energized, the energizing component being movable from outside the movement following the latter's assembly.

3,811,268
APPARATUS FOR FORMING CHAIN-LINKS
Paul Rahn, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany
Filed Aug. 23, 1972, Ser. No. 282,955
Int. Cl. B21l *11/02*
U.S. Cl. 59—27 **5 Claims**



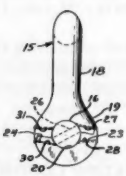
Apparatus for forming chain links with minimum stress on the forming mandrel and dies in which a rod to be bent into a chain link of succeeding links of a chain is oriented into a longitudinal groove of a fixed mandrel by a feeder; a rod holder engages the rod medially while a pair of flanking dies engage the rod at one side move it toward the holder and form the back-curve (or initiate a portion of it) as the dies are moved in one direction; the flanking dies then move in an opposite direction simultaneously with the work holder, completing the back curve, where after the flanking dies move a distance substantially equal to the arc of the side curves being formed (corresponding to the outer configuration of the fixed mandrel) to form the rod into a substantial U-shape whereafter terminal ends of the rod are bent toward each other to complete the link.

3,811,269
METHOD OF FORMING A DRIVE FASTENER DEVICE
Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.
Division of Ser. No. 46,397, June 15, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 288,055
Int. Cl. B21d *53/46;* **B21g** *3/00*
U.S. Cl. 59—77 **8 Claims**



The present disclosure relates generally to improvements in staples and spikes and in methods for producing the same. The work engaging extremities of the staple or spike tines are formed with oppositely disposed converging swaged surfaces. Each tine extremity also present opposed longitudinal surfaces disposed at substantially 90° with respect to the converging swage surfaces, and terminate at opposite ends of a complemental arcuate or curved work engaging edge. The invention also contemplates a novel method of producing the above-mentioned structure by shearing and swaging the opposite extremities of a pre-determined length of metallic rod stock.

3,811,270
SHACKLE FOR KILN CHAIN
Floyd O. Smith, Portland, Oreg., assignor to Esco Corporation, Portland, Oreg.
Filed June 7, 1972, Ser. No. 260,411
Int. Cl. F16g *15/00*
U.S. Cl. 59—86 **5 Claims**



A shackle is disclosed for a kiln chain including a U-shaped unitary body having a pair of legs equipped with eyes for the receipt of a shackle pin. Diametrically aligned slots are associated with one of the eyes. The shackle pin extending

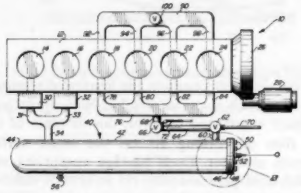
through the eyes and has a bore at one end thereof. A locking pin is in said bore and extends into the slots whereby rotation of the shackle pin causes distortion of the locking pin to provide a secure support for suspending kiln chain.

3,811,271

COMBUSTION ENGINE APPARATUS HAVING COMPRESSION CYLINDERS AND POWER CYLINDERS

Edward F. Sprain, 1070 N. 99th Ave., Space 16, Sun City, Ariz.

Filed Sept. 20, 1973, Ser. No. 398,949
Int. Cl. F02g *3/02*
U.S. Cl. 60—39.6 **6 Claims**



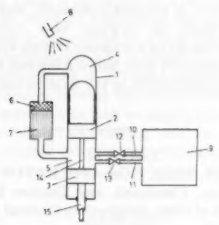
External combustion engine apparatus is disclosed which includes compression cylinders for compressing a fuel-air mixture from a carburetor and separate power cylinders which receive combustion gases under relatively high pressure and derive power therefrom. Between the compression cylinders and the power cylinders are combustion chambers, which receive the compressed fuel air mixture and in which ignition and combustion takes place, and a pressure accumulator which receives the combusted gases from the combustion chambers. From the pressure accumulator the gases flow into the power cylinders.

3,811,272

STIRLING CYCLE ENGINE POWER CONTROL MEANS

Sven Anders Samuel Hakansson, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Nov. 9, 1972, Ser. No. 305,074
Claims priority, application Great Britain, Nov. 9, 1971, 51865/71
Int. Cl. F03g *7/06*
U.S. Cl. 60—518 **5 Claims**



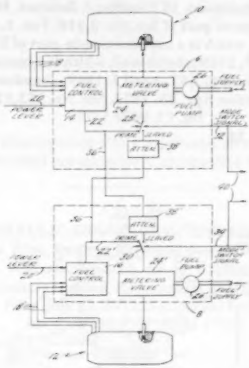
To control the power of a hot gas Stirling cycle engine a dead volume chamber is connected with the low temperature working chamber by two valves. The first valve has a smaller opening thereby operating the engine to absorb power acting as a brake. The second valve has a larger opening which permits the engine to idle at reduced power.

3,811,273

SLAVED FUEL CONTROL FOR MULTI-ENGINED AIRCRAFT

Anthony N. Martin, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 8, 1973, Ser. No. 339,479
Int. Cl. F02c *7/02*; F02g *3/00*; F02c *9/04*
U.S. Cl. 60—39.15 **8 Claims**



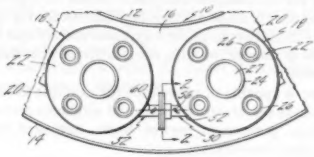
When a failure occurs in a fuel control for a turbine engine in a multi-engine aircraft, the fuel metering valve for the engine with the failed fuel control is connected to operate in a slaved mode in response to the control signal produced by the prime fuel control of one of the other aircraft engines. For slaved mode operation, the control signal produced by the prime fuel control is slightly attenuated and lag compensation is applied thereto before the control signal is fed to the fuel metering valve of the slaved engine in order to compensate for variations in engine characteristics and to provide additional safety margin.

3,811,274

CROSSOVER TUBE CONSTRUCTION

Henry A. Calderon, Newington, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 30, 1972, Ser. No. 284,828
Int. Cl. F02c *7/20*
U.S. Cl. 60—39.32 **11 Claims**



In a burner can for a combustion chamber for a gas turbine engine, a crossover tube interconnecting adjacent burner cans comprises a cylindrical outer wall extending laterally from a side opening in the burner can wall and a cylindrical inner wall radially spaced from the outer wall forming an annular passageway therebetween, the passageway having one end in communication with and terminating substantially at the combustion zone of the burner can. The outer wall has an opening for admitting cooling fluid into the annular passageway, whereupon cooling fluid entering the annular passageway is discharged from the annular passageway into the combustion zone and is carried downstream by currents within the com-

bustion zone thereby cooling the downstream portion of the outer wall where it joins the side opening of the burner can wall.

The invention described herein was made under or during the course of a contract with the Department of the Navy.

3,811,275

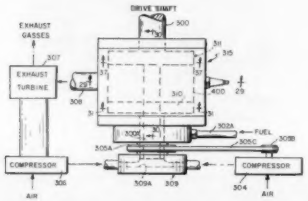
ROTARY TURBINE ENGINE

Antonio C. Mastrobuono, 25 Woodland, Belmont, Mass.

Continuation-in-part of Ser. No. 8,918, Feb. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 870,615, Oct. 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 812,667, April 2, 1969, abandoned. This application Apr. 23, 1973, Ser. No. 353,524

Int. Cl. F02c 5/02

U.S. Cl. 60—39.34 **19 Claims**



A rotary turbine engine comprising a drive shaft, a rotor integral with the drive shaft, and a substantially cylindrical stationary casing surrounding the rotor, the rotor comprising a plurality of combustion chambers spaced radially with respect to the drive shaft. Each combustion chamber comprises spaced end walls substantially normal to the axis of the drive shaft and has a nozzle extending outwardly from the chamber with its axis directed towards peripheral wall of the casing. Each combustion chamber also comprises a substantially arcuate wall extending between said end walls formed by a substantially arcuate plane which is generated about a line which is substantially at the intersection of a plane which coincides with the longitudinal axis of the nozzle and a plane which substantially coincides with a radius of the rotor which is substantially normal to the second plane. The engine also comprises means for supercharging the combustion chambers comprising a centrifugal air compressor driven by the drive shaft at a substantially higher speed than the drive shaft and means for providing communication between said centrifugal air compressor and said combustion chambers for at least initially supercharging the combustion chambers, means for injecting ignitable gas to the combustion chambers and means for igniting the gas in the chambers to cause expansion thereof and the expanded gases to emerge from the nozzles thereby causing rotation of the rotor.

The engine is capable of many uses for example in vehicles such as automobiles, tractors, trains and airplanes and also in electric power generators, power tools, outboard motors, helicopters, lawn mowers, etc.

3,811,276

COOLING OF COMBUSTION CHAMBER WALLS

Jacques Emile Jules Caruel, Dammarie-les-Lys; Herve Alain Quillevere, Issy-les-Moulineaux; Jean-Pierre Jules Emile Castellant, Chartrettes, and Armand Jean-Baptiste Lacroix, Itteville, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs d'Aviation, Paris, France

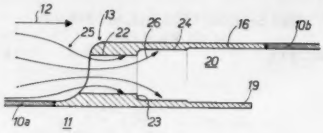
Filed Oct. 6, 1972, Ser. No. 295,585

Claims priority, application France, Oct. 8, 1971, 71.36330

Int. Cl. F02c 7/18

U.S. Cl. 60—39.65 **6 Claims**

Means for providing a connection between an upstream element and a downstream element, offset towards the outside in relation to the latter, in a flame tube of a combustion chamber which is intended to function in an external flow of pressurized air. The connecting means comprise an annular solid body adapted to connect the said upstream element to the said downstream element and a thin tongue which is located in the extension of the upstream element and defines, with the downstream element, an annular duct into which there emerges a plurality of regularly spaced passages which pass



through the said solid body in the general direction of the external flow in such a way as to take, from the latter, a current of air which is adapted to form, downstream of the annular duct, a film of cooling air on the inner surface of the downstream element. Each passage comprises an upstream bore which emerges coaxially, via an abrupt widened portion, into a downstream bore having a greater cross-section and an appreciable length which itself emerges into the annular duct.

3,811,277

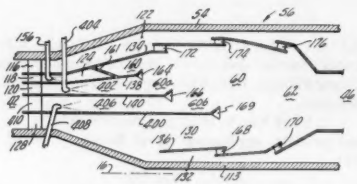
ANNULAR COMBUSTION CHAMBER FOR DISSIMILAR FLUIDS IN SWIRLING FLOW RELATIONSHIP

Stanley J. Markowski, East Hartford, Conn., assignor to United Aicraft Corporation, East Hartford, Conn.

Division of Ser. No. 84,086, Oct. 26, 1970. This application Apr. 18, 1973, Ser. No. 352,138

Int. Cl. F02c 3/00

U.S. Cl. 60—39.65 **19 Claims**



The characteristics of thermodynamically and aerodynamically dissimilar fluids in swirling flow relationship are established and/or varied to accelerate mixing and hence combustion in the combustion zone and mixing and hence cooling of the products of combustion, in the dilution zone of an annular burner.

3,811,278

FUEL INJECTION APPARATUS

Jack Rogers Taylor, Cincinnati, and Thomas Loyd Du Bell, Maineville, both of Ohio, assignors to General Electric Company, Lynn, Mass.

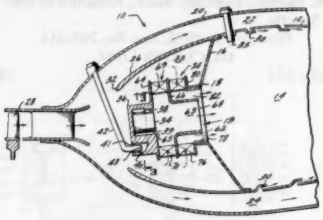
Filed Feb. 1, 1973, Ser. No. 328,641

Int. Cl. F02c 7/22

U.S. Cl. 60—39.74 R **8 Claims**

An improved fuel injection apparatus of the type employing a system of counter-rotating primary and secondary air swirl vanes is provided. Fuel from a low pressure source is first accelerated through an involute swirl passage by an inflow of high velocity pressurized air. The pre-swirled fuel-air mixture is then discharged into a centrifuging air stream where it is

atomized and circumferentially dispersed in a uniform manner. An additional counter-rotating air stream in cooperation with the initial centrifuging air stream develops high shear stresses to further atomize and uniformly disperse the fuel-air mixture for burning in a combustion chamber.



3,811,279

SHUT-OFF VALVE FOR A WORKING MEDIUM CIRCUIT

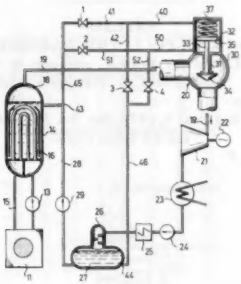
Ernst Vogeli, Wiesendangen/Zurich, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 21, 1971, Ser. No. 145,705

Claims priority, application Switzerland, May 26, 1970, 7809/70

Int. Cl. F01k *7/20*

U.S. Cl. 60—660 **9 Claims**



The shut-off valve is operated via a servo-motor under the influence of the working medium in the circuit. One side of the servo-piston is connected to a first pressure point in the circuit while the opposite side is connected to a second pressure point in the circuit of different pressure. Control valves are also provided to reverse the connections of the pressure points to the servo-motor and to supply the working medium to the servo-motor. Depending on the valve condition required, the control valves are manipulated to permit opening or closing of the valve.

3,811,280

PROCESS OF USING STORABLE PROPELLANT FUELS IN SUPERSONIC COMBUSTION RAMJETS

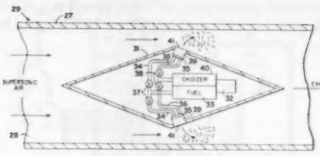
Walter W. Wharton, and Joseph W. Connaughton, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 6, 1967, Ser. No. 674,064

Int. Cl. C06d *5/08, 5/04*

U.S. Cl. 60—207 **6 Claims**

Liquid propellant fuels such as liquid hydrazines, amine fuels, and blends thereof with hydrocarbons used as storable fuels for supersonic combustion in ramjets. The storable liquid fuel is decomposed in flight into a hot hydrogen-containing gas which is then injected into a supersonic air stream and subsequently oxidized in a supersonic combustion mode.



3,811,281

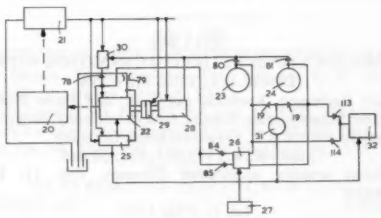
HYDRAULIC ENGINE STARTING SYSTEMS

John Arthur Wise, Dudley; Raymond Joseph Wellings, Oxley, and Eric Williams, Codsall, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed July 12, 1972, Ser. No. 271,188

Int. Cl. F15b *1/02*; **F02n** *17/00*

U.S. Cl. 60—413 **10 Claims**



An hydraulic engine starting system includes a motor which is used both for engine starting and for driving a pump for charging accumulators for storing liquid under pressure. For engine starting the motor is connected to one accumulator to receive liquid therefrom. For charging the accumulators the motor is connected to an hydraulic circuit powered by the engine and a clutch connects the motor to the pump. The clutch is operated by pressure in the circuit so that it is disengaged during engine starting. The motor has a constant flow servo-system which has means for varying the displacement of the motor according to whether the motor is receiving liquid from the accumulator or the circuit.

3,811,282

HYDRAULIC CONTROL CIRCUIT FOR A REVERSIBLE HYDRAULIC MOTOR

Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

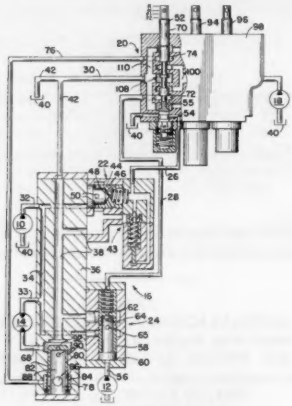
Filed Jan. 26, 1973, Ser. No. 327,240

Int. Cl. F15b *13/09*

U.S. Cl. 60—421 **10 Claims**

There is disclosed a hydraulic control system for selectively operating a remote hydraulic motor in at least two forward operating speeds and at least one reverse operating speed. The system includes first and second pumps and pilot controlled valve means to control communication of the pumps with the motor. The pilot controlled valve means are responsive to a main control valve to selectively communicate the first and

second pumps to the motor and to drain, thus providing for variable speed operation of the motor. A third pump operatively communicates by way of the main control valve and a reverse check valve to provide fluid pressure for reverse operation of the motor.



3,811,283

MULTI-CYLINDER STIRLING GAS MOTOR WITH DOUBLE-ACTING PISTONS

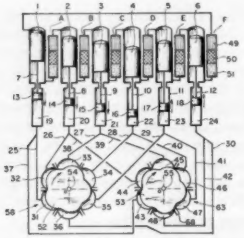
Rudolf Hartmann, Karlsbad-Auerbach, and Horst Zimmermann, Mammolshain Taunus, both of Germany, assignors to Battelle-Institut e.V., Frankfurt Main, Germany

Filed Feb. 8, 1973, Ser. No. 330,665

Claims priority, application Germany, Feb. 11, 1972, 2206488

Int. Cl. F02g 1/04

U.S. Cl. 60—484 **8 Claims**



Multi-cylinder Stirling gas motor with double acting pistons which are rigidly coupled with hydraulic pump pistons by piston rods. The hydraulic pumps provide pressure fluid driving two identical hydrostatic transmissions having multiple lobed rotatable disc pistons with their outer edges lying sealed within respective housings having a number of chambers which corresponds with the number of hydraulic pumps, each pair of corresponding chambers of the two hydraulic motors being connected in parallel and to the respective hydraulic pump. The disc pistons of the hydraulic motors are mounted upon respective eccentric members which can be angularly adjusted relative to each other. The rate of delivery of hydraulic fluid by the respective pumps to the chambers of both hydraulic motors is varied by relative rotation of the eccentric shafts mounting the rotatable disc pistons of the hydraulic motors to change the phase position of the rotatable disc pistons relative to each other.

3,811,284

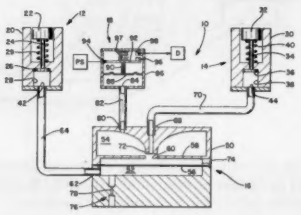
CONTROL SYSTEM

Donald H. Trussell, 23 Princeton Rd., Burlington, Mass., and Philip A. Surette, Reading, Mass., assignors to said Trussel, by said Surette

Filed July 6, 1972, Ser. No. 269,416

Int. Cl. F15b 13/04

U.S. Cl. 60—533 **18 Claims**



A control system, suitable for use as a two-hand safety control system, for producing an output signal to operate a device comprising a first fluid pulse generator generating a first fluid pulse in response to a manual force (e.g., depressing a first push-button), a second fluid pulse generator generating a second fluid pulse in response to another manual force (e.g., depressing a second push-button), and a fluid-responsive switch responsive only to substantially simultaneous receipt of these pulses to produce the output signal.

3,811,285

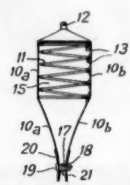
FLOATING ANTI-POLLUTION BARRIER DEVICE

Louis Ballu, Colombes, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Paris, France

Filed June 9, 1972, Ser. No. 261,410

Int. Cl. E02b 15/04

U.S. Cl. 61—1 F **24 Claims**



A floating anti-pollution barrier for use in water which is constituted by a skirt-like element immersed in the water and supported by floating elements which are constituted by air-tight pockets whose openings face in the downward direction when installed in the water; the pockets are thereby connected with one another by bands of flexible fabric.

3,811,286

DAM HAVING CONTOURED INTERNAL APRON

Alfred Feiner, Porz-Westhoven, Germany, assignor to Strabag Beu-AG, Koln-Deutz, Germany

Filed Nov. 17, 1972, Ser. No. 307,662

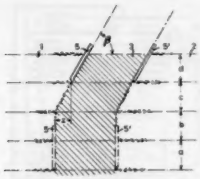
Claims priority, application Germany, Dec. 8, 1971, 2160874

Int. Cl. E02b 7/10

U.S. Cl. 61—31 **20 Claims**

In a dam comprising an upright core packing providing a sealing apron, upstream and downstream embankments inti-

mately interengaged with and supporting the core packing, said embankments having different individual settling rates tending to lessen engagement thereof with the core packing, the improvement which comprises the angle of inclination



with respect to the horizontal on the downstream side, being less in the upper portion of the core packing than in the lower portion thereof for counteracting the different settling rates and the tendency thereof to lessen said engagement.

3,811,287

BOTTOM AND BANK FACING

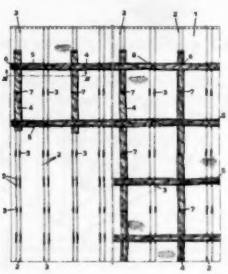
Jan Gerrit De Winter, Lijsterstraat 18, Enschede, Netherlands

Continuation-in-part of Ser. No. 721,784, April 16, 1968, abandoned. This application Aug. 10, 1971, Ser. No. 170,607

Claims priority, application Netherlands, Apr. 17, 1967, 6705380; Nov. 2, 1967, 6714909

Int. Cl. E02b *3/12*

U.S. Cl. 61—38 **11 Claims**



A bottom and bank facing for preventing erosion of subaqueous soil structures comprising a lattice of fascines fastened to a mat of synthetic resin material, wherein the resin material comprises a fabric sheet having means attached thereto for use in securing the fascines to the fabric, such means including transversely spaced groups of threads, each group being woven into the fabric at spaced portions along their length to provide resultant loops or floating portions in each group of threads to which the fascines are attached; or separate strips of fabric fastened to the fabric sheet for being tied to the fascines.

3,811,288

TRAVELING FACE SUPPORT WITH AN ATTACHED EXTENSIBLE SHIELD

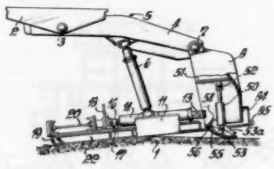
Karl-Heinz Wehner, Castrop-Rauxel; Gunter Bell, Horenburg, and Willy Watermann, Dortmund, all of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed May 15, 1972, Ser. No. 253,574

Int. Cl. E21d *15/44*

U.S. Cl. 61—45 D **11 Claims**

A travelling face support has an attached extensible shield which, besides providing the means of shoring up the roof of the seam and providing a connected coal cutting shield, has both a packing shield to protect the coal cutting area and a floor beam. One or more pull-back cylinders act upon a supporting frame divided into sections along its length. A continuous recess, transverse to the direction of the prop conveyor, is provided in each section of the supporting frame to receive a forward longitudinal section of the corresponding floor beam.



A lifting device, which is supported on the prop floor, is fixed in a recess of a section of the supporting frame in the rear part of the extensible shield beneath the coal cutting shield. The lifting mechanism of this device is used to control the position of the forward longitudinal position of a heel plate of the supporting frame section.

3,811,289

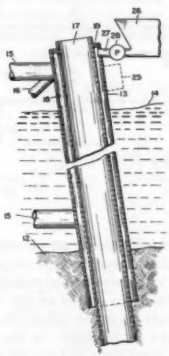
METHODS OF GROUTING OFFSHORE STRUCTURES

Max Bassett, South Houston, Tex., assignor to C. Nelson Shields, Jr., trustee, Houston, Tex.

Continuation of Ser. No. 175,184, Aug. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 858,951, Sept. 18, 1969, Pat. No. 3,601,999. This application Apr. 16, 1973, Ser. No. 351,261

Int. Cl. E02b *17/00*; **E02d** *5/24*; **E02b** *17/00*

U.S. Cl. 61—46 **5 Claims**



A predetermined amount of grouting material is introduced from the top into an annular space between a piling and a jacket of a supporting leg of an offshore structure. The amount of the material is sufficient to displace water from the space through the lower end of the jacket, and when the material sets, it forms a plug in the bottom portion of the annular space. Additional grouting material is then introduced to fill the upper portion of the annular space and is allowed to set.

3,811,290

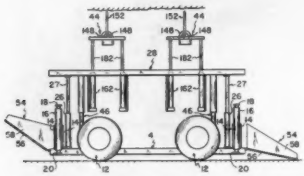
MULTI-PURPOSE VEHICLE FOR USE UNDERGROUND

Jon R. Swoager, Imperial, Pa., assignor to Automation Equipment, Inc., Imperial, Pa.

Continuation-in-part of Ser. No. 241,975, April 7, 1972. This application Oct. 20, 1972, Ser. No. 299,354

Int. Cl. E21d *15/44*

U.S. Cl. 61—63 4 Claims



A self-propelled vehicle having independently steerable and suspended wheel assemblies for use in underground excavations. The vehicle includes means for temporarily supporting the roof of an excavation, drilling holes in the roof, and inserting bolts therein. The vehicle also includes scoops mounted at each end with a conveyor joining the scoops, thus giving the machine a self-loading capacity. The application also discloses a method for systematically installing roof bolts.

3,811,291

METHOD OF OPERATING A REFRIGERATION PLANT AND A PLANT FOR PERFORMING THE METHOD

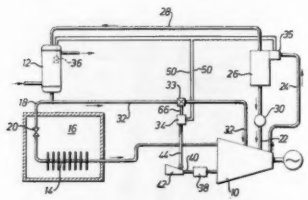
Laurtiz Benedictus Schibbye, Algvagen, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed Dec. 14, 1972, Ser. No. 314,993

Claims priority, application Great Britain, Dec. 28, 1971, 60274/71

Int. Cl. F25b *43/02*

U.S. Cl. 62—84 15 Claims



A refrigeration plant including an oil-injected compressor, an oil separator, a condenser and an evaporator. The plant comprises means to introduce liquid refrigerant to the compression phase of the cycle ahead of the oil separator. The plant further comprises means to adjust the amount of liquid refrigerant introduced in response to the temperature difference between the condenser and the oil separator, in order to keep the difference on a constant level of 5°C to 15°C.

3,811,292

REFRIGERATION FAN CONTROL SYSTEM

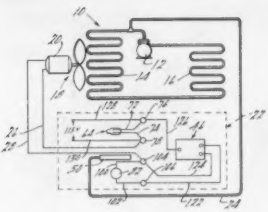
Walter Harold Hoenisch, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Apr. 9, 1973, Ser. No. 349,023

Int. Cl. F25b *39/04*

U.S. Cl. 62—183 20 Claims

A control for a refrigeration system including a compressor, a condensor, an evaporator and an electrically energized fan for passing air in heat exchange relation with respect to the compressor, the control including a light source, fan control means responsive to the light source for varying the operating



speed of the fan, and means for varying the magnitude of light transmitted to the fan control means from the light source in response to the refrigerant pressure in the refrigeration system.

3,811,293

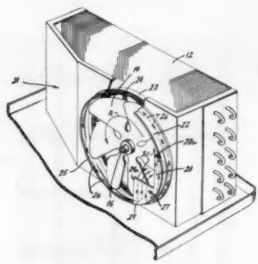
AIR CONDITIONER CONDENSATE DISPOSAL APPARATUS

James P. Flynn, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Mar. 19, 1973, Ser. No. 342,719

Int. Cl. F25b *47/00*

U.S. Cl. 62—280 6 Claims



A window type air conditioner in which moisture derived from the evaporator is conveyed to a condenser-containing chamber for disposal therein, said chamber including a wall having an inlet ring which confronts a condenser fan and around the interior surface of which ring moisture circulates during operation of the apparatus. A retaining wall impedes flow of moisture out of the inlet ring in a direction upstream of the condenser fan, and an aspirator baffle means confronts the fan and projects radially inwardly of the inlet ring to establish a reduced pressure zone on the fan side of the baffle means. Moisture circulating in the inlet ring flows to the outer edge of said baffle means and thence across the baffle means to an inner edge thereof from which it is discharged and entrained in the condenser cooling air stream.

3,811,294

COOLER FOR FAUCET-EQUIPPED BEVERAGE CONTAINERS

William Taylor, Columbus, Ohio, assignor to Ebco Manufacturing Company, Columbus, Ohio

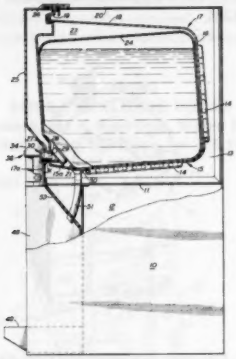
Filed Feb. 23, 1973, Ser. No. 335,041

Int. Cl. B67d *5/62*

U.S. Cl. 62—390 2 Claims

A refrigerated cooler-dispenser for drinking water or other beverage which is packaged in a rigid or semi-rigid, faucet

equipped container. The cooler-dispenser features a thermally insulated cabinet having a cooling compartment to receive and support one or more cubicle beverage containers in forwardly and downwardly tilted positions with the faucets of the beverage containers extending forwardly outwardly through a



recessed closure for the cooling compartment, and wherein the cabinet is equipped with exteriorly accessible, manually operable faucet actuators adapted to engage and manipulate the faucet of the beverage containers between open and closed positions.

3,811,295

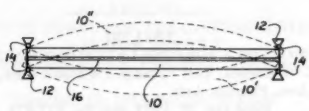
MEANS FOR FATIGUE PROOFING A SOLID ROTARY SHAFT

Hrista Stamenkovic, 4426 12th St., Riverside, Calif.

Continuation-in-part of Ser. No. 25,733, April 6, 1970, abandoned. This application June 12, 1972, Ser. No. 261,784

Int. Cl. F16d *1/00*

U.S. Cl. 64—1 V **10 Claims**



Fatigue is prevented in a solid rotary shaft by maintaining it devoid of inflection points and operating it in a pair of bearings to prevent buckling of the shaft because of the bending or vibrating action of applied loads which tend to induce tensile forces in the shaft leading to fatigue failure. This is accomplished by providing at least one longitudinal bore in the shaft and anchoring a closely fitted tensioned tendon in the bore in a manner placing the shaft solely in compression to a degree sufficient to neutralize substantially the tensile stresses induced in the shaft during rotation for maintaining the shaft devoid of reversals of curvature and preventing the creation of an inflection point, the close fit of the tendon in the bore confining the tendon against lateral movement relative to the bore and preventing an inflection point in the tendon. Preferably, there are several bores in the shaft arranged adjacent the periphery thereof, each bore having a closely fitted tensioned tendon anchored therein, the tendons being collectively effective for maintaining the shaft in compression and preventing the creation of an inflection point in the shaft. The tension of the tendons can be varied for controlling the oscillation of the shaft.

3,811,296

CIRCULAR KNITTING MACHINE WITH JACK REMOVAL SLOTS

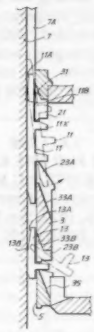
Massimo Bianchi, and Gianni Conti, both of Firenze, Italy, assignors to G. Billi & C.S.P.A., Firenze, Italy

Filed Sept. 13, 1971, Ser. No. 179,789

Claims priority, application Italy, Sept. 14, 1970, 11775/70

Int. Cl. D04b *15/32*

U.S. Cl. 66—8 **2 Claims**



At least one through recess extends through the cam shell surrounding the rotary needle cylinder of a circular knitting machine at a predetermined position in line with the cam track therein to allow for withdrawal of the needles jacks therethrough. The upper and lower edges of the recess are chamfered to permit inclination of the jacks with respect to the needle cylinder to facilitate said withdrawal operation.

3,811,297

CONTROL MECHANISM FOR CIRCULAR KNITTING MACHINES WITH ROTATING NEEDLE CARRIER

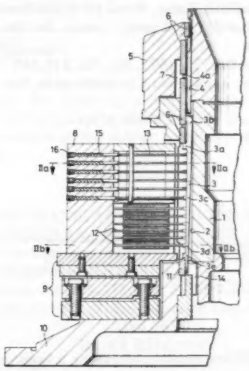
Gerhard Hamma, Spaichingen-Wurttemberg Hofwies, Germany, assignor to Maschinenfabrik Spaichingen GmbH, Spaichingen, Wurttemberg, Germany

Filed Oct. 1, 1970, Ser. No. 77,226

Claims priority, application Germany, Oct. 9, 1969, 1950846

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **2 Claims**



A pattern control mechanism for a circular knitting machine with a rotating needle carrier, in which the needles are controlled at a pattern position by means of a plurality of

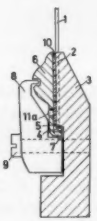
electromagnetic pattern devices, each needle being provided with an associated needle jack having control feet which follow each other in sequence in a stepwise manner, the needle jacks being slidable in the needle carrier and being selectively swingable, at the pattern selection point all of the needle jacks with their control feet are carried past a ramp-like cam which swings the needle jacks into a first position, in which they are in a position to cooperate with their jack-advancing cam. A plurality of selectively energizable electromagnetic stopping means are provided for holding the jacks into a second position wherein they do not cooperate with such cam. Every stopping magnet is provided with a movable returning mechanism; the stopping magnets work upon selected jacks at the pattern selecting station, the returning force which opposes the magnets being less than the strength of the magnets.

3,811,298

MOUNTING SUPPORT FOR THE KNITTING NEEDLE OF A WARP KNITTING MACHINE

Karl Kohl, Chlorodontstrabe 10, Obertshausen, Germany

Filed Apr. 10, 1972, Ser. No. 242,359
Int. Cl. D04b *23/00, 27/00*
U.S. Cl. 66—86 **1 Claim**



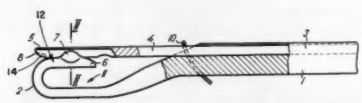
The knitting needles of a warp knitting machine are received and held in grooves of a needle bar and a clamping plate is removably mounted on the needle bar for holding the knitting needles on the needle bar. A resilient synthetic resin sheet, which conforms to the clamping plate, is removably arranged between the needle bar and the clamping plate.

3,811,299

TWO PART KNITTING NEEDLE

Ervin Peschl, Brna; Josef Zmatlik; Jaromir Sedlecky, both of Praha, and Vladimir Kolar, Brno, all of Czechoslovakia, assignors to Statnis vyzkumny ustav textilni, Liberec, Czechoslovakia

Filed Dec. 21, 1971, Ser. No. 210,367
Claims priority, application Czechoslovakia, Dec. 22, 1970, 8694-70
Int. Cl. D04b *35/04*
U.S. Cl. 66—120 **2 Claims**



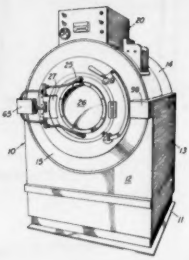
A two-part knitting needle comprising a hook part formed with a stem and a hook, and a sliding latch part to reciprocate in a longitudinal guideway provided in said stem, the free end portion of the hook being terminated in an onrun portion to be engaged by said sliding latch part in order to prevent the latch from being deflected towards the interior of the hook part.

3,811,300

SPRAY RINSE DEVICE FOR WASHER-EXTRACTOR

Henry W. Barton, and Robert Cloud, both of Wichita, Kans., assignors to Unimac Company, Inc., Marianna, Fla.

Filed June 26, 1972, Ser. No. 266,255
Int. Cl. D06f *33/02, 39/08*
U.S. Cl. 68—12 R **10 Claims**



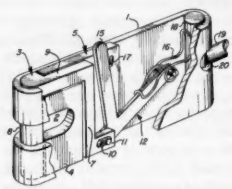
A washing machine having a housing structure with a pivotally mounted closure means and including a power driven basket rotatably supported for tumbling clothes during a washing cycle and spinning clothes during a rinsing and spin-drying cycle. The washing machine includes automatic control means for effecting washing, rinsing and spin-drying cycles of operation. Electrically controlled locking means is operatively associated with the closure means for maintaining the closure means in a locked position during cyclic operation of the washing machine, with the locking means being automatically releasable after a washing cycle of operation is completed. Spraying means is supported on the closure means for spraying a liquid rinsing medium radially outward through the rotatable clothes supporting basket during a rinsing cycle. The spraying means includes valve means cyclically controlled for continuously dispensing rinsing liquid during a rinsing cycle, with the valve being operable for stopping the flow of liquid through the dispensing nozzles in response to the closure being moved to an open position.

3,811,301

MULTIPLE PURPOSE LATCH MECHANISM

Louis E. Woodcock, Turf Paradise c/o Stable Gate, Bell Rd. & 19th Ave., Phoenix, Ariz.

Filed Jan. 29, 1973, Ser. No. 327,475
Int. Cl. E05b *65/48;* **E05c** *19/08*
U.S. Cl. 70—12 **3 Claims**



A latch mechanism is disclosed which includes a generally rectangular housing having a U-shaped notch in one end thereof for receiving a chain link or other element to be restrained. The outer portion of the notch is selectively closed off by a laterally translating bolt such that the element to be contained is completely surrounded. The bolt is generally U-shaped and is provided with a rearwardly extending tag at the outer end of one of its legs. The tag is slotted to receive a pin fixed to a pivot member upon which spring bias may be ap-

plied to urge the bolt normally open or normally closed, as may be desired. Appropriate finger operated lock means are preferably included in both the normally open and normally closed variants. Optionally, a key operated lock mechanism may be provided at the housing end remote from the element receiving notch. To the extent possible, the entire mechanism, as well as the housing, is fabricated from stainless steel or a similar alloy whereby the unit is extremely sturdy and longlasting, even under adverse environmental conditions.

3,811,302

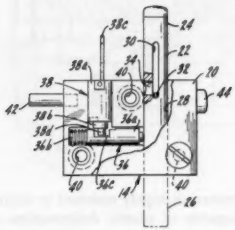
LOCK FOR SLIDING DOORS

Donald E. Sorensen, 401 N. Rust Trail, Willow Springs, Ill.

Filed July 26, 1972, Ser. No. 275,185

Int. Cl. E05b *65/08*

U.S. Cl. 70—100 **3 Claims**



A lock for sliding doors that is adapted to be easily installed on the lower left, lower right, upper left or upper right-hand corner of the sliding door. The lock prevents the sliding door from being moved in a horizontal or vertical position. The lock includes a housing with a movable plunger mounted therein which has a retracted and locking position. Locking means within the housing lock the plunger in its locking position. Key actuated means activate the locking means to release the plunger so that the plunger may be moved from its locking position to its retracted position.

3,811,303

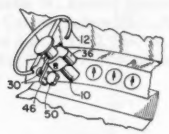
PROTECTIVE GUARD FOR THE IGNITION SWITCH OF A MOTOR VEHICLE

Glynn C. Robertson, 4555 S. Federal St., Apt. 306, Chicago, Ill.

Filed Jan. 12, 1973, Ser. No. 323,106

Int. Cl. B60r *25/00*; **H01h** *9/28*

U.S. Cl. 70—237 **3 Claims**



A protective guard for the ignition switch of a motor vehicle comprising a pair of members which are hingedly secured together so that they may be opened and closed with respect to the steering column of a motor vehicle and positioned around the steering column adjacent the ignition switch with one of said members having a housing surrounding the ignition switch, and means for locking the pair of members around said steering column to provide a protective guard and prevent unauthorized access to the ignition switch.

3,811,304

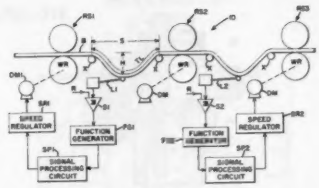
LOOPER CONTROLLED ROLLING MILL

George E. Gorker, Schenectady, N.Y., assignor to General Electric Company, Salem, Va.

Filed Sept. 20, 1972, Ser. No. 290,613

Int. Cl. B21b *37/04*

U.S. Cl. 72—17 **13 Claims**



A Rod and Bar Merchant mill is described wherein the output signals from the loopers measuring the loop depth between stands is amplified by increasing factors with increased loop depth beyond a predetermined amount. The amplified signals from the loopers then are utilized to control the speed regulator supervising the motor drive of the adjacent stand to return the loop to the desired configuration. For decreasing loop depths, a constant amplification factor preferably is utilized to adjust the signals prior to feeding the signals to the speed regulators of the adjacent stands.

3,811,305

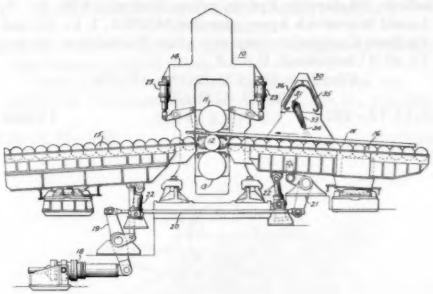
MOVABLE DESCALER SPRAY HEADER

William H. Saylor, Jr., Davidsville, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 10, 1972, Ser. No. 296,480

Int. Cl. B21b *45/08*; **B21c** *43/00*

U.S. Cl. 72—39 **12 Claims**



Apparatus for applying a high pressure fluid spray to descale a workpiece in a rolling mill in which the supply of fluid is controlled by the movement of various elements of the rolling mill.

3,811,306

METHOD OF MANUFACTURING THE BODY OF A NECK-IN CAN AND AN APPARATUS USED THEREFOR

Takayuki Yoshimura, No. 22-11, 2-chome, Matsubara, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 269,275, July 5, 1972, Division of Ser. No. 269,275, July 5, 1972. This application Aug. 6, 1973, Ser. No. 386,003

Int. Cl. B21d *19/02*

U.S. Cl. 72—126 **12 Claims**

In the manufacture of the body of an ordinary neck-in can, the metal blank obtained from the metal sheet is subjected to drawing and ironing to form a cylindrical body with a bottom end, which is then subjected to trimming along the peripheral

electromagnetic pattern devices, each needle being provided with an associated needle jack having control feet which follow each other in sequence in a stepwise manner, the needle jacks being slidable in the needle carrier and being selectively swingable, at the pattern selection point all of the needle jacks with their control feet are carried past a ramp-like cam which swings the needle jacks into a first position, in which they are in a position to cooperate with their jack-advancing cam. A plurality of selectively energizable electromagnetic stopping means are provided for holding the jacks into a second position wherein they do not cooperate with such cam. Every stopping magnet is provided with a movable returning mechanism; the stopping magnets work upon selected jacks at the pattern selecting station, the returning force which opposes the magnets being less than the strength of the magnets.

3,811,298

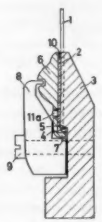
MOUNTING SUPPORT FOR THE KNITTING NEEDLE OF A WARP KNITTING MACHINE

Karl Kohl, Chlorodontstrabe 10, Obertshausen, Germany

Filed Apr. 10, 1972, Ser. No. 242,359

Int. Cl. D04b *23/00, 27/00*

U.S. Cl. 66—86 **1 Claim**



The knitting needles of a warp knitting machine are received and held in grooves of a needle bar and a clamping plate is removably mounted on the needle bar for holding the knitting needles on the needle bar. A resilient synthetic resin sheet, which conforms to the clamping plate, is removably arranged between the needle bar and the clamping plate.

3,811,299

TWO PART KNITTING NEEDLE

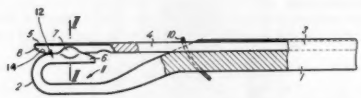
Ervin Peschl, Brna; Josef Zmatlik; Jaromir Sedlecky, both of Praha, and Vladimir Kolar, Brno, all of Czechoslovakia, assignors to Statnis vyzkumny ustav textilni, Liberec, Czechoslovakia

Filed Dec. 21, 1971, Ser. No. 210,367

Claims priority, application Czechoslovakia, Dec. 22, 1970, 8694-70

Int. Cl. D04b *35/04*

U.S. Cl. 66—120 **2 Claims**



A two-part knitting needle comprising a hook part formed with a stem and a hook, and a sliding latch part to reciprocate in a longitudinal guideway provided in said stem, the free end portion of the hook being terminated in an onrun portion to be engaged by said sliding latch part in order to prevent the latch from being deflected towards the interior of the hook part.

3,811,300

SPRAY RINSE DEVICE FOR WASHER-EXTRACTOR

Henry W. Barton, and Robert Cloud, both of Wichita, Kans., assignors to Unimac Company, Inc., Marianna, Fla.

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Int. Cl. D06f *33/02, 39/08*

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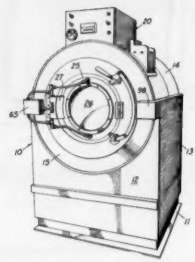

A washing machine having a housing structure with a pivotally mounted closure means and including a power driven basket rotatably supported for tumbling clothes during a washing cycle and spinning clothes during a rinsing and spin-drying cycle. The washing machine includes automatic control means for effecting washing, rinsing and spin-drying cycles of operation. Electrically controlled locking means is operatively associated with the closure means for maintaining the closure means in a locked position during cyclic operation of the washing machine, with the locking means being automatically releasable after a washing cycle of operation is completed. Spraying means is supported on the closure means for spraying a liquid rinsing medium radially outward through the rotatable clothes supporting basket during a rinsing cycle. The spraying means includes valve means cyclically controlled for continuously dispensing rinsing liquid during a rinsing cycle, with the valve being operable for stopping the flow of liquid through the dispensing nozzles in response to the closure being moved to an open position.

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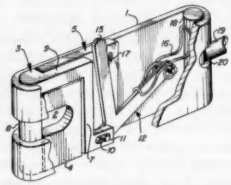
U.S. Cl. 70—12 **3 Claims**



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plied to urge the bolt normally open or normally closed, as may be desired. Appropriate finger operated lock means are preferably included in both the normally open and normally closed variants. Optionally, a key operated lock mechanism may be provided at the housing end remote from the element receiving notch. To the extent possible, the entire mechanism, as well as the housing, is fabricated from stainless steel or a similar alloy whereby the unit is extremely sturdy and longlasting, even under adverse environmental conditions.

3,811,302
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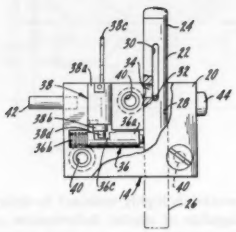
Donald E. Sorensen, 401 N. Rust Trail, Willow Springs, Ill.
Filed July 26, 1972, Ser. No. 275,185
Int. Cl. E05b *65/08*
U.S. Cl. 70—100 **3 Claims**



A lock for sliding doors that is adapted to be easily installed on the lower left, lower right, upper left or upper right-hand corner of the sliding door. The lock prevents the sliding door from being moved in a horizontal or vertical position. The lock includes a housing with a movable plunger mounted therein which has a retracted and locking position. Locking means within the housing lock the plunger in its locking position. Key actuated means activate the locking means to release the plunger so that the plunger may be moved from its locking position to its retracted position.

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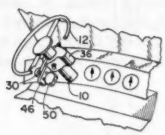
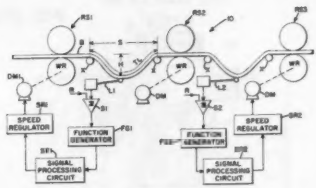
PROTECTIVE GUARD FOR THE IGNITION SWITCH OF A MOTOR VEHICLE
Glynn C. Robertson, 4555 S. Federal St., Apt. 306, Chicago, Ill.
Filed Jan. 12, 1973, Ser. No. 323,106
Int. Cl. B60r *25/00*; **H01h** *9/28*
U.S. Cl. 70—237 **3 Claims**



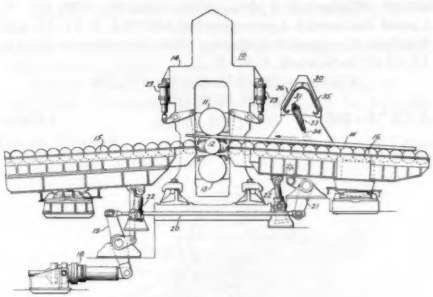
A protective guard for the ignition switch of a motor vehicle comprising a pair of members which are hingedly secured together so that they may be opened and closed with respect to the steering column of a motor vehicle and positioned around the steering column adjacent the ignition switch with one of said members having a housing surrounding the ignition switch, and means for locking the pair of members around said steering column to provide a protective guard and prevent unauthorized access to the ignition switch.

3,811,304
LOOPER CONTROLLED ROLLING MILL
George E. Gorker, Schenectady, N.Y., assignor to General Electric Company, Salem, Va.
Filed Sept. 20, 1972, Ser. No. 290,613
Int. Cl. B21b *37/04*
U.S. Cl. 72—17 **13 Claims**



A Rod and Bar Merchant mill is described wherein the output signals from the loopers measuring the loop depth between stands is amplified by increasing factors with increased loop depth beyond a predetermined amount. The amplified signals from the loopers then are utilized to control the speed regulator supervising the motor drive of the adjacent stand to return the loop to the desired configuration. For decreasing loop depths, a constant amplification factor preferably is utilized to adjust the signals prior to feeding the signals to the speed regulators of the adjacent stands.

3,811,305
MOVABLE DESCALER SPRAY HEADER
William H. Saylor, Jr., Davidsville, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Oct. 10, 1972, Ser. No. 296,480
Int. Cl. B21b *45/08*; **B21c** *43/00*
U.S. Cl. 72—39 **12 Claims**

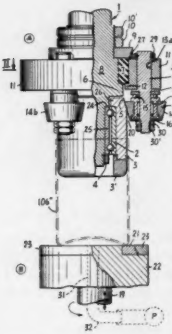


Apparatus for applying a high pressure fluid spray to descale a workpiece in a rolling mill in which the supply of fluid is controlled by the movement of various elements of the rolling mill.

3,811,306
METHOD OF MANUFACTURING THE BODY OF A NECK-IN CAN AND AN APPARATUS USED THEREFOR
Takayuki Yoshimura, No. 22-11, 2-chome, Matsubara, Setagaya-ku, Tokyo, Japan
Division of Ser. No. 269,275, July 5, 1972, Division of Ser. No. 269,275, July 5, 1972. This application Aug. 6, 1973, Ser. No. 386,003
Int. Cl. B21d *19/02*
U.S. Cl. 72—126 **12 Claims**

In the manufacture of the body of an ordinary neck-in can, the metal blank obtained from the metal sheet is subjected to drawing and ironing to form a cylindrical body with a bottom end, which is then subjected to trimming along the peripheral

edge of the upper opening whereby the burr projected from the edge by trimming is broken down before said cylindrical body is passed to the subsequent step. An apparatus for breaking down the burr is also provided.



In this apparatus the burr is broken down by means of the relative rotary movement between said cylindrical body having the burr formed and a roller provided for breaking down said burr.

3,811,307

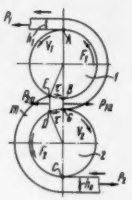
METHOD OF ROLLING METAL SHEET ARTICLES

Vladimir Nikolaevich Vydrin, ulitsa Svobody, 139, kv. 7; Leonid Matveevich Ageev, ploschad MOPRA, 2, kv. 33, and Vladimir Georgievich Sosjurko, ulitsa Teatralnaya, 21, kv. 13, all of Chelyabinsk, U.S.S.R.

Filed June 28, 1971, Ser. No. 157,256

Int. Cl. B21b *1/00*

U.S. Cl. 72—205 **1 Claim**



A method of rolling metal sheet articles in which the rolls in an adjacent pair are rotated in opposite directions at different peripheral speeds under conditions of a rigid mechanical characteristic of the drive of the roll rotating at a higher peripheral speed and such a mechanical characteristic of the drive of the roll rotating at a lower peripheral speed that in the process of rolling the ratio of the peripheral speeds of the rolls is equal to the ratio of the thicknesses of the articles at input and output portions thereof before and after the rolling in the adjacent pair of rolls at a constant thickness of the output portion of the article and at a speed of movement of the output portion of the article equal to the peripheral speed of the roll rotating at a higher peripheral speed.

3,811,308

PROFILING OF WORKPIECES

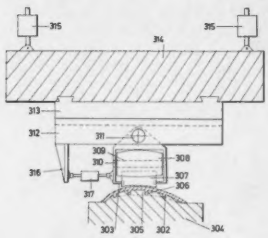
Jacob Marcovitch, Johannesburg, South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein

Continuation of Ser. No. 80,043, Oct. 12, 1970, abandoned, Continuation-in-part of Ser. No. 615,613, Feb. 13, 1967, Pat. No. 3,533,259. This application Sept. 20, 1972, Ser. No. 290,751

Claims priority, application South Africa, Feb. 14, 1966, 66/804

Int. Cl. B21h *7/00*; B21b *1/00*

U.S. Cl. 72—210 **4 Claims**



Workpieces of materials highly resistant to deformation or compaction but capable of plastic deformation under high pressure are subjected to transient, very high pressure applied to elements of the workpiece progressively, until the whole workpiece has been traversed. The pressure may be applied by a patterned formation which imposes its profile on the workpiece, or the workpiece may be kneaded into intimate contact with the pattern to receive its impress.

3,811,309

METHOD AND APPARATUS FOR COLD DRAWING OR ROLLING OF METAL WIRE ROD

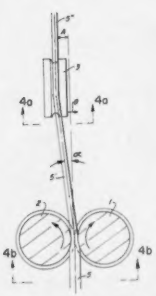
Knut Lennart Nordstrom, 11, Solhemsvagen, Smedjebacken, Sweden

Filed Sept. 8, 1972, Ser. No. 287,227

Claims priority, application Switzerland, Sept. 10, 1971, 11495/71

Int. Cl. B21b *41/00, 13/12*

U.S. Cl. 72—235 **6 Claims**



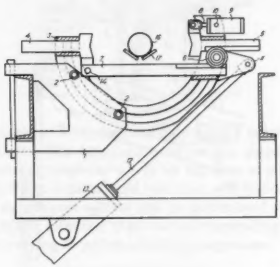
A method and apparatus for wire drawing using the oval-round series in which wire rod is fed through the round groove rolls in a manner such that axially directed forces having the same direction are imposed on both round groove rolls thereby preventing displacement of the rolls in opposite directions and stabilizing the wire rod in the round groove.

3,811,310

APPARATUS FOR TURNING PIPES BETWEEN ROLLING PASSES

Oldrich Stefek; Vojtech Triska, and Ladislav Bednar, all of Ostrava-Hrabuvka, Czechoslovakia, assignors to Nova Hut Klementa Gottwalda, narodni podnik, Ostrava-Kuncice, Czechoslovakia

Filed Feb. 17, 1972, Ser. No. 227,228
Int. Cl. B21b *39/20*
U.S. Cl. 72—252 6 Claims



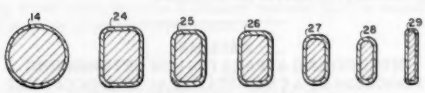
Apparatus for turning of pipes between rolling passes, as in rolling according to the Stiefel process. The apparatus includes a support for the pipe intermediate rolling passes, a frame, a toroidal segment mounted on the frame for rotation about the axis of the segment, the segment having opposed jaws reciprocable toward and away from each other along a diameter of the segment which passes through the axis of the tube when the latter rests upon the support. The opposed jaws are connected to a single prime mover so as to be selectively driven in opposite directions through the same distance so as to grip the tube; with the tube thus gripped, the toroidal segment is rotated about its axis, as for instance, through an angle of 90°, and the jaws are then released from the tube, so that the tube in its new angular position may be presented to the rolling mill for a further pass therethrough.

3,811,311

MAKING FLAT COPPER-CLAD STEEL WIRE

Angelo P. Barone, Sycamore, Ill.; Ralph G. D'Ascoli, Yonkers, N.Y., and Charles W. Bechle, Sycamore, Ill., assignors to The Anaconda Company, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,173
Int. Cl. B21c *1/00*; B21h *8/00*
U.S. Cl. 72—278 6 Claims



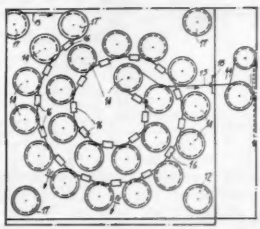
A more uniform cladding thickness is retained on flat copper-clad steel wire by drawing the first rectangular sections, rather than rolling them, from round wire, and then rolling the final flat wire.

3,811,312

DRAWING-PULLEY GROUP FOR A WIRE-DRAWING MACHINE FOR THIN METAL WIRES

Piero Pietroni, Ascoli Piceno, Italy, assignor to Technofil S.p.A., Ascoli Piceno, Italy

Filed Dec. 29, 1972, Ser. No. 319,185
Claims priority, application Italy, Dec. 31, 1971, 33197/71
Int. Cl. B21c *1/04*
U.S. Cl. 72—278 5 Claims



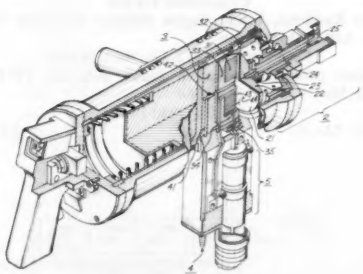
A group of drawing pulleys arranged in a spiral path and having between the successive pulleys individual dies for progressively reducing the cross section of a wire drawn by the pulleys through the dies. The axes of the pulleys are disposed spaced along the spiral path and in parallel relationship. The pulleys are rotatably driven with the speed of rotation such that the speed of each pulley is higher than the preceding pulley and proportional to the elongation of the wire being drawn because of reduction of its diameter.

3,811,313

ELECTROMAGNETIC HIGH ENERGY IMPACT APPARATUS

Hendrik P. Schut, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 133,090, April 12, 1971, Pat. No. 3,737,990. This application Dec. 18, 1972, Ser. No. 316,306
Int. Cl. B21j *7/30*
U.S. Cl. 72—430 16 Claims

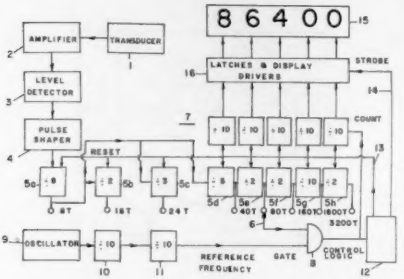


An apparatus utilizing electromagnetic energy for producing high impact forces by means of a ram propelled against a work piece. A specific utilization of the apparatus is in the installation of fasteners such as rivets in structural assemblies. The apparatus described herein is the work center of an electromagnetic impact tool and comprises the following components: electromagnetic high energy pulse coil, ram means, aerostatic bearing means and connector means.

3,811,314
TIME-INTERVAL RATE METER FOR TIME MEASURING DEVICES AND METHOD FOR CHECKING TIME PIECES

Abraham Y. Anouchi, 83 Oak Hill St., Newton, Mass.

Filed Sept. 6, 1972, Ser. No. 286,624
Int. Cl. G04b 17/00
U.S. Cl. 73—6 9 Claims

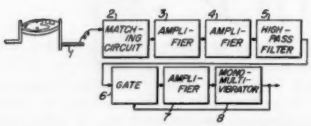


A rate meter for checking the accuracy of time measuring devices such as watches and clocks and accurately determining the deviation thereof from a time standard includes a digital readout or display counter indicating in terms of seconds or tenth of seconds per day whether a time measuring device is fast, slow, or exactly on time. The read-out or display counter is controlled by electronic circuitry predicated upon the measurement of time elapsed between two non-consecutive mechanical vibrations, or pulses, of a time measuring device.

3,811,315
APPARATUS FOR AUTOMATIC DIGITAL MEASUREMENT OF WATCH PERFORMANCE BY UTILIZING TICKS

Yoshio Kunitomi, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1972, Ser. No. 226,438
Claims priority, application Japan, Feb. 22, 1971, 46-10282; Mar. 5, 1971, 46-12084
Int. Cl. G04d 7/00
U.S. Cl. 73—6 3 Claims

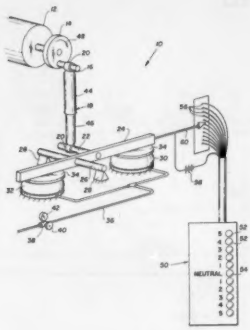


An apparatus for performing automatic digital measurement of the performance of a watch by utilizing a component of the ticks thereof, in which a frequency band of the ticks of the watch is selected, the ratio of signal to noise is improved in that frequency band thereby amplifying the ticks with high fidelity.

3,811,316
TESTING DEVICE FOR SHOCK ABSORBERS AND THE LIKE

Pasquale J. Amendolia, St. James, N.Y., assignor to Motor Devices Corporation, Brooklyn, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,581
Int. Cl. G01m 17/04
U.S. Cl. 73—11 6 Claims

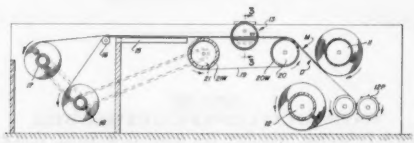


The invention provides a device for testing shock absorbers and the like to indicate the load that is actually being transmitted through the same in the compression and rebound modes by applying a cycling force to the test article, measuring its resistance to movement, and displaying the same through a visual indicator.

3,811,317
METHOD FOR TESTING MEMERANOUS DEVICES FOR LEAKS

Ronald J. Leonard, Elk Grove, and James M. Ahrens, Niles, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 6, 1972, Ser. No. 232,062
Int. Cl. G01m 3/04, 3/20
U.S. Cl. 73—40 12 Claims



A method and apparatus for testing transport membranes provides for advancing a membrane and an indicator medium in unison along a test path while applying a detector fluid to the membrane to produce marks on the indicator medium representative of leaks in the membrane.

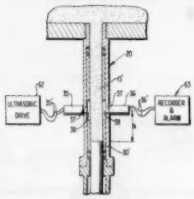
3,811,318
METHOD AND APPARATUS FOR DETERMINING PROGRESS OF A CHEMICAL REACTION OCCURING WITHIN BEADS IN A LIQUID SUSPENSION

Charles R. Killian, Baton Rouge, La., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Mar. 2, 1971, Ser. No. 120,240
Int. Cl. G01n 15/04
U.S. Cl. 73—61 R 13 Claims

Polymerization reactions requiring suspension of the reactants as small particles within a suspending medium are ex-

amined for stability of the suspension by isolating samples at intervals during the process and determining rising or settling times for the suspended particles and correlating the separation time with the stability of the suspension system. A sample is obtained as by drawing it from a reaction chamber into a narrow tube which receives a transverse beam of ultra high frequency sonic waves and the transparency of the suspension



is then measured at a correspondingly placed receiver for the ultrasonic waves. The interface between the dispersed phase and the dispersing medium moves up the tube at a rate which, when compared to a calculated safe rate, will indicate the stability of the suspension system and an automated rise time indicator and alarm effects a read-out corresponding to suspension stability varying as polymerization progresses.

3,811,319

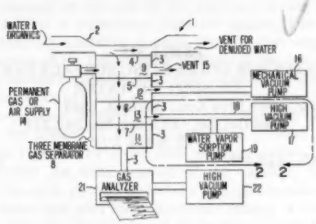
MEMBRANE, GAS SEPARATOR WITH MEANS FOR REMOVING WATER VAPOR

James T. Arnold, Los Gatos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 12,560, Feb. 19, 1970, abandoned. This application Dec. 1, 1971, Ser. No. 203,894

Int. Cl. G01n *31/08*; **B01d** *13/00, 53/22*

U.S. Cl. 73—23 **7 Claims**



A portable three membrane type gas separator including an input region, and output region and two interstage regions defined between adjacent membranes. The second interstage region, closest to the output region, includes a pump or trap for pumping water vapor from the second interstage at a pumping speed which substantially exceeds the pumping speed of the pump or trap for nitrogen, whereby water vapor is prevented from overloading the high vacuum pump connected in gas communication with the output stage of the separator and any additional vacuum pump connected into the second interstage region of the separator. A suitable pump for pumping water vapor includes a desicant material such as zeolite, alumina or phosphorous pentozide.

3,811,320

SURFACE SCALER APPARATUS

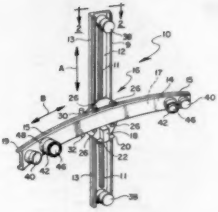
Thomas E. Cowell, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1973, Ser. No. 340,149

Int. Cl. G01n *29/04*; **B25b** *11/00*

U.S. Cl. 73—67.8 S **10 Claims**

A surface scaler apparatus for servicing various areas of a tank or the like, particularly remote limited access areas, is comprised of a pair of independently driven cross-members mounting one or more inspection or work tools, each limb of the cross-members riding on tracks in the adjoining limb so that as one cross-member is attached to the wall of the tank by electromagnets or the like, connected to the ends of the limbs,



the other is free to move along the tracks on the attached limb. By energizing magnets on the just moved limb and releasing magnets on the attached limb, the previously attached limb now may be moved to a different position, thus enabling the apparatus to be moved remotely to any position for inspection purposes or the like.

3,811,321

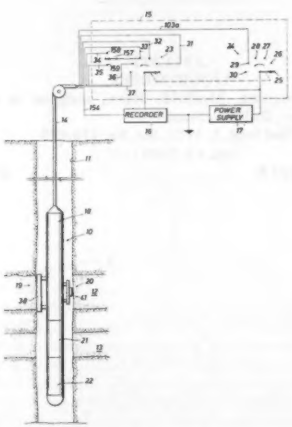
METHODS AND APPARATUS FOR TESTING EARTH FORMATIONS

Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,236

Int. Cl. E21b *49/00*

U.S. Cl. 73—155 **36 Claims**

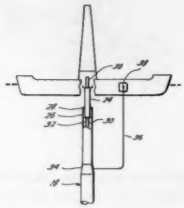


In the representative embodiments of the new and improved methods and apparatus for testing earth formations disclosed herein, fluid-admitting means are placed into sealing engagement with a potentially-producible earth formation and selectively-operable valve means are rapidly opened to place a low-pressure chamber and a flow line in the tool into communication with the isolated formation to remove plugging materials from a filtering medium ahead of the flow line before connate fluids are inducted into the tool as well as to obtain one or more preliminary pressure measurements which are indicative of the potential success of the testing operation and the possible nature of the earth formation.

3,811,322
METHOD AND APPARATUS FOR MONITORING RETURN MUD FLOW

William J. Swenson, Houston, Tex., assignor to The Offshore Company, Houston, Tex.

Filed Sept. 25, 1972, Ser. No. 291,907
Int. Cl. E21b 47/10
U.S. Cl. 73—155 8 Claims

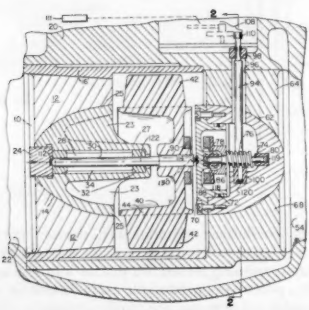


A method and apparatus for monitoring steady state mud flow return rate through a marine riser extending between a floating drill ship and the ocean floor, and including a telescopic joint wherein the mud flow return rate is measured at a point below the telescoping joint where the flow rate is essentially unaffected by the pumping action of the telescoping joint and the measurements are then transmitted to the drill ship.

3,811,323
LIQUID METER

George H. Swenson, Medfield, Mass., assignor to Hersey Products Inc., Dedham, Mass.

Filed Sept. 8, 1971, Ser. No. 178,678
Int. Cl. G01f 1/10
U.S. Cl. 73—231 R 6 Claims

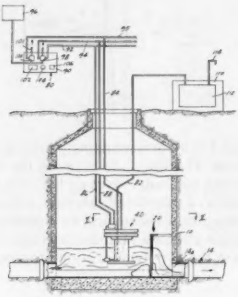


Liquid flow rate meter of the turbine type in which rotor thrust bearing unloading is achieved by downstream increase of effective flow rate area to produce a Bernoulli's effect upstream force on the rotor.

3,811,324
PROPORTIONAL SAMPLING APPARATUS AND METHOD

Alex J. Doncer, Burbank, and Harold R. White, New Lenox, both of Ill., assignors to Alar Engineering Corporation, Burbank, Calif.

Filed June 5, 1972, Ser. No. 259,497
Int. Cl. G01n 1/14
U.S. Cl. 73—421 B 7 Claims

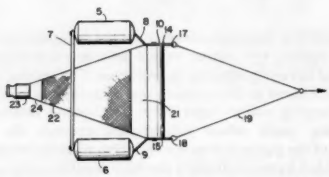


A proportional sampling system automatically obtains selected samples at selected intervals in a quantity directly proportionate to the volume of flow in a stream and removes the samples for cumulation in a collection receptacle at a remote point.

3,811,325
APPARATUS FOR COLLECTING SURFACE PARTICLES ON BODY OF WATER

Lyle Carter, 1903-33rd Ave., Oakland, Calif.

Filed Oct. 30, 1972, Ser. No. 302,215
Int. Cl. G01n 1/10
U.S. Cl. 73—425.4 R 11 Claims

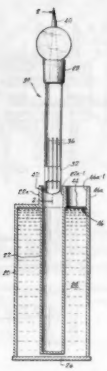


An apparatus for sampling and collecting floating particulate matter on the surface of a body of water has parallel spaced apart longitudinal floats supporting a rigid tubular frame. Secured to the frame are two parallel, horizontal hydrofoil bodies spaced apart from each other to form an intake opening. A funnel-shaped net with its wide end secured to the intake opening and its narrow end terminating in a collecting screen collects surface particulate matter which is caused to flow into the intake opening as the apparatus is towed on a body of water. The lower hydrofoil body maintains the intake opening at a predetermined depth below the water surface, while the upper hydrofoil body enables the apparatus to ride over swells.

3,811,326
DISPOSABLE DILUTION SYSTEM

Vincent G. Sokol, 93 Sunnyside Dr., Yonkers, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,246
Int. Cl. B01l 3/02
U.S. Cl. 73—425.4 P 18 Claims



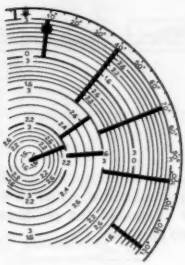
A disposable dilution system particularly suited for blood testing. A container for containing a diluent includes a capillary tubing assembly holder therein that is sealed from the diluent. The holder terminates in an upper portion thereof that is adapted to engage the upper portion of a capillary tubing assembly which is stored within the holder. An access opening to the container is provided adjacent to the holder. The access opening is closed by a penetrable membrane which may be pierced by an end of the capillary tubing assembly when the latter is withdrawn from the holder. The capillary tubing assembly includes a neck portion that engages the upper portion of the holder prior to usage of the device. A collar is positioned below the neck portion and provides the sole means for containing one or more capillary tubes. The tubes may be separately formed, in which case they are detachably held by the collar, or the tubes may be formed integrally within the collar. The upper ends of the capillary tubes are spaced below the neck portion of the capillary tubing assembly. The neck portion includes a passage therethrough and also an inspection port for colorimeter testing. A volume-occupying plug may be employed at the lower end of the container, the plug including a cut-out portion to permit it to be positioned about the lower part of the capillary tubing assembly holder and the lower portion of the capillary tubing assembly when the latter is positioned in the diluent upon its removal from the holder.

3,811,327
BALANCING APPARATUS WITH AN OPTICAL UNBALANCE INDICATOR

Heinrich Hack, Spachbruecken, Germany, assignor to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Apr. 3, 1973, Ser. No. 347,463
Claims priority, application Germany, Apr. 11, 1972, 2217264
Int. Cl. G01m 1/08
U.S. Cl. 73—465 17 Claims

The present balancing apparatus includes an optical indicator which enables the operator to balance a workpiece, for example an impeller wheel of a super charger, in two balancing planes, even simultaneously, if desired. Two vector meters with respective display screens are used one for each balancing plane. A light spot providing an unbalance indication and further optical markings are projected onto the respective screen to provide direct information regarding the unbalance location and regarding the nature of the balancing operation to be performed. The optical markings are projected with the aid of selsyn driven diaphragms having slots therein which are shaped to correspond to the shape of the markings. Due to the

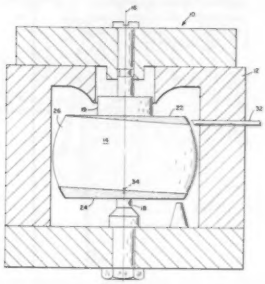


selsyn drive the workpiece rotation and the diaphragm rotation are synchronized with each other whereby the operator may read off all the information from the two screens for balancing the workpiece without any extra calculations.

3,811,328
PULSE DURATION MODULATION PICKOFF

Aubrey Rodgers, Huntsville, and Rayburn K. Widner, Arab, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 3, 1973, Ser. No. 320,795
Int. Cl. G01c 19/28
U.S. Cl. 74—5.6 B 4 Claims



A pulse duration modulation pickoff is capable of sensing variations in the boundary layer of gas adjacent the rotor surface of a gyro. A gas collector probe senses the variation in boundary layer thickness and couples the signals to the sensor load circuit for responding to gyro changes in attitude. This pickoff method of sensing rotor displacement allows displacement signals to be obtained with no external excitation of the pickoff.

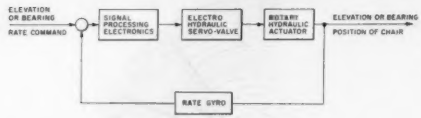
3,811,329
STABILIZED PLATFORM

Frederick W. White, North Franklin, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1972, Ser. No. 312,166
Int. Cl. G01c 19/52
U.S. Cl. 74—5.41 5 Claims

A gyroscopically stabilized platform is provided with servo controls to eliminate gross pitch and roll motions of a ship on which the platform is mounted. The platform is fitted with

gyroscopes which generate a voltage signal when the platform moves from its stabilized position. The voltage signal so produced is processed electronically in a control box wherefrom a signal is sent to servo valves which change

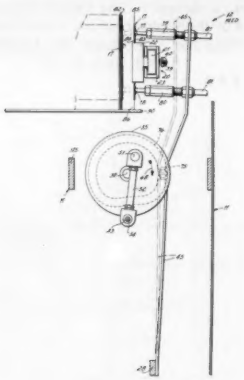


hydraulic flow in an electro-hydraulic system of the platform. This change in hydraulic flow is such as to energize a group of actuators which command the platform back to the commanded stabilized position.

3,811,330
PACKAGING MACHINE HAVING RECIPROCATING TRANSPORT CONVEYOR

Robert J. Weichhand, Fort Wright; Ralph J. Schuler, Fort Mitchell, both of Ky., and Julian A. Dieter, Cincinnati, Ohio, assignors to R. A. Jones and Company, Incorporated, Covington, Ky.

Filed Aug. 18, 1972, Ser. No. 281,933
Int. Cl. F16h *25/08*
U.S. Cl. 74—53 **3 Claims**



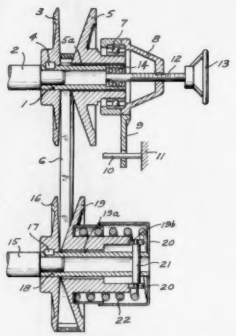
A packaging machine having a plurality of work stations longitudinally spaced in a line, a longitudinal reciprocating transport bar for moving packages intermittently through said work stations, a plurality of reciprocable work station elements, a plurality of leaf springs connected at one end to a support and at their other ends respectively to the transport bar and work elements, and cams on a common drive shaft cooperating with the leaf springs to swing the leaf springs back and forth to operate the work station elements and transversely reciprocate the transport bar.

3,811,331
V-BELT DRIVING DEVICE

Friedrich Moogk, Sinn, Germany, assignor to E. & A. Becker KG, Maschinen-und Getriebebau, Sinn/Dillkreis, Germany

Filed Oct. 5, 1972, Ser. No. 295,291
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 A **4 Claims**

There is disclosed a variable speed drive for use with an asymmetric V-belt. The V-belt drive comprises a drive shaft and a driven shaft disposed in spaced apart parallel relationship. Each of the shafts seats a sheave consisting of two halves; one half of each sheave being seated on its shaft secured against rotation and axial displacement and the other half of each sheave being rotatable and axially displaceable on its shaft. The facing sides of the sheaves have different angles relative to the shafts thereby constituting asymmetric running

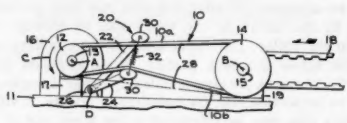


surfaces for the V-belt used for transmitting the rotation of the drive shaft to the driven shaft. The axially displaceable half of each sheave is biased by a spring assembly toward the respective other half. The spring pressure can be adjusted by setting means thereby correspondingly varying the transmission ratio between the two shafts.

3,811,332
AUTOMATIC TENSIONING DEVICE

Martin S. Brown, Plainfield, and Stellios A. Avramidis, Greenfield, both of Ind., assignors to FMC Corporation, San Jose, Calif.

Filed Aug. 22, 1972, Ser. No. 282,826
Int. Cl. F16h *7/12*
U.S. Cl. 74—242.11 S **6 Claims**



A dual tensioning device is provided to take up the slack on an endless belt or chain regardless of the direction of drive. A pair of arms are pivoted at a common point outside the loop defined by the endless belt or chain. Each arm has a friction pad pivotally mounted at the outer end, and the ends of the arms, which are of unequal length, are connected by a tension spring. The longitudinal axis of the spring is inclined at different angles to the arms when the endless belt or chain is driven in a normal operating direction so that a greater tensioning force is applied to the slack side of the belt or chain.

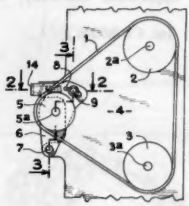
3,811,333
DRIVE BELT TENSIONING DEVICE

Armand Castarede, Meudon-la-Foret, France, assignor to Regie National Des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Apr. 12, 1973, Ser. No. 350,652
Claims priority, application France, May 4, 1972, 72.15836
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.15 R **4 Claims**

Comprises a sheet metal support pivotably mounted on a first face of a structure which defines a right-angled corner

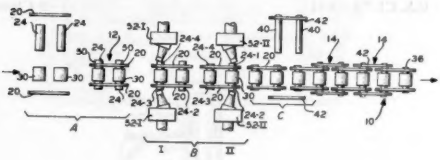
with a second face of the structure. A tab portion, bent at an angle to the plane of the support, extends around the corner and engages an abutment movably mounted in a blind aperture in said second face. A spring interposed between the abutment and the end of the aperture biases the abutment and the support for tensioning the belt. Fixing means fix the support in the required position.



3,811,334
CHAIN CONSTRUCTION

Fred J. Kuenzig, Weatogue, and Joseph V. Montano, West Hartford, both of Conn., assignors to Jeffrey Galion Inc., Columbus, Ohio

Filed June 8, 1972, Ser. No. 261,087
Int. Cl. F16g *13/02*
U.S. Cl. 74—251 R **18 Claims**



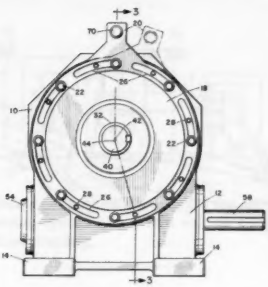
The chain, and its method of construction, involves the insertion of a bushing in the opposed apertures of a pair of opposed chain link plates such that there is not only an interference fit between the bushing and the link plate, but also so that the bushing extends outwardly of the link plate. It may be flanged over thereabout, as by spinning, to thereby form a 360° rim. Links are thus formed, by a pair of link plates and a pair of bushings. When such links are interconnected into a continuous chain, by additional link plates and pins which pass through the bushings the rims and/or the bushing extensions automatically provide a space between the adjacent and overlapping link plates.

3,811,335
ADJUSTABLE WORM DRIVE UNIT

Arnold Hunsberger, Dellzura, Calif., assignor to U.S. Elevator Manufacturing Corporation, Spring Valley, Calif.

Filed Apr. 25, 1973, Ser. No. 354,328
Int. Cl. F16h *55/18, 1/16*
U.S. Cl. 74—409 **6 Claims**

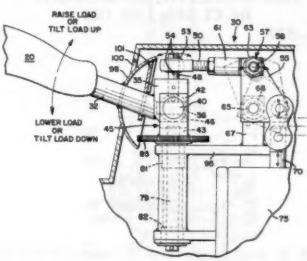
A worm drive unit, particularly for heavy duty use, with means for adjusting the worm gear to take up play or wear in the drive. The worm gear shaft is supported at both ends in bearings which are eccentrically adjustable simultaneously by externally coupled linkage to ensure alignment. Adjustment over a wide range can be made rapidly without dismantling any portion of the unit and, in most instances, without disconnecting the drive couplings to the unit.



3,811,336
MULTI-FUNCTION CONTROLLER

Gerald Steven Pulskamp, New Bremen, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Sept. 1, 1972, Ser. No. 285,755
Int. Cl. G05g *9/04*; B66f *9/06*
U.S. Cl. 74—471 XY **11 Claims**



A single multi-function controller for an industrial self-propelled materials handling truck incorporates all desired control functions except steering.

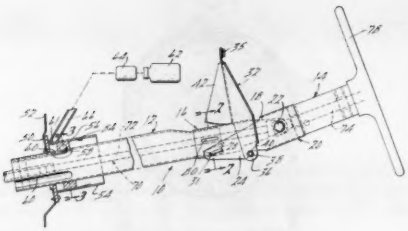
3,811,337
ENERGY ABSORBING STEERING COLUMN FOR MOTOR VEHICLES

William D. Allison, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1973, Ser. No. 347,963
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **7 Claims**

This disclosure relates to an energy absorbing steering column for a motor vehicle, and more particularly to a column that is constructed to collapse in a controlled manner under an impact load against the steering wheel and thereby absorb the kinetic energy of the impact. According to a preferred embodiment, the steering column includes a piston device that is constructed to displace the steering column and steering wheel rearwardly when subjected to a compressed gas. A compressed gas source is connected through an inertia sensitive valve to the steering column whereby the compressed gas is conveyed to the column in response to extreme vehicle

deceleration such as might occur in a collision. Thus, when the vehicle strikes an object, the compressed gas released to the steering column will extend the column rearwardly and increase the distance through which the column may collapse to absorb the kinetic energy of an object striking the steering wheel.



3,811,338

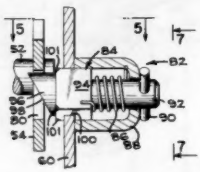
LATCH MECHANISM

Joseph A. Federspiel, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 20, 1972, Ser. No. 307,918

Int. Cl. G05g *5/08, 5/06*

U.S. Cl. 74—527 **5 Claims**



A vehicle mounted lift assembly having latch mechanisms for latching pivoted lift arms in an uplift position whereby an implement, particularly a powered rotary mower, connected to the lift arms can be automatically latched in an elevated position while other implements are being raised or lowered by the lift assembly. The latch mechanisms each include a pivotal and an axially translatable bolt having a non-circular end portion which is slidably received in a complementary non-circular opening when in an arm latching position. The bolt is manually movable to an unlatched position with the non-circular portion moved axially out of engagement with the non-circular opening, and with the bolt then being pivoted about its axis to preclude registration of the non-circular portion with the non-circular opening. A combination torsion-compression spring is prestressed to normally exert a compressive force tending to hold the bolt in latching position, and to normally exert a torsional force tending to pivot and maintain the bolt in its unlatched position. A cam face on the latch bolt automatically locks the associated lift arm in raised position in response to movement of the lift arm into its raised position only if the bolt has been pivoted to its latching position.

3,811,339

PEDAL FOR BICYCLES AND SIMILAR VEHICLES

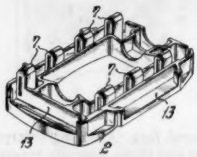
Hubert Konzorr, Unna, Germany, assignor to Union Sils, van de Loo & Co., Frondenberg, Germany

Filed Aug. 14, 1973, Ser. No. 388,227

Claims priority, application Germany, Aug. 17, 1972, 2240484

Int. Cl. B62m *3/12*

U.S. Cl. 74—594.4 **14 Claims**



A pedal, especially for a bicycle or the like, having a spindle and two block-like members adapted to be placed in face to face engagement in surrounding relation to the spindle and having tread surfaces facing away from the spindle. The members have protrusions formed thereon on the sides facing each other with the protrusions in overlapping relation and apertured, and elongated connecting means extending through the apertures and connecting said members together.

3,811,340

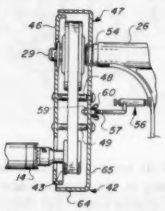
BELT GUARD

Glenn B. Morse, 321 Fountain St., N.E., Grand Rapids, Mich.

Filed Nov. 13, 1972, Ser. No. 306,421

Int. Cl. F16p *1/02*

U.S. Cl. 74—611 **5 Claims**



A belt Guard is supported by the spindle carrying one sheave engaged with the belt being guarded, and is also supported by an adjustable strut assembly interconnecting the guard with the machine frame supporting the spindle. This arrangement provides for angular adjustment of the guard about the spindle axis to accomodate various positions of a second sheave engaging the belt.

3,811,341

DIFFERENTIAL GEAR MECHANISM

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

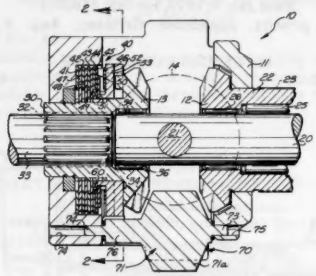
Filed Nov. 8, 1972, Ser. No. 304,617

Int. Cl. F16h *1/44*

U.S. Cl. 74—711 **13 Claims**

A locking differential mechanism comprises a differential gear means including an input gear and a pair of output gears.

A locking mechanism locks up the differential in response to a predetermined amount of differentiating action occurring. The locking mechanism functions to lock one of the output



gears to the case of the differential. The actuator for actuating the locking mechanism to effect the lockup comprises an oscillating weight actuator mechanism.

3,811,342

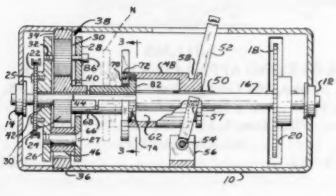
A MINI-BIKE TWO-SPEED PLANETARY TRANSMISSION WITH STATIONERY RING, CARRIER OUTPUT AND NOVEL CLUTCHING MEANS

Ray L. Barthel, 11017 S. Parkside, Chicago Ridge, Ill.

Filed Aug. 25, 1972, Ser. No. 283,747

Int. Cl. F16h *3/44*

U.S. Cl. 74—750 R **6 Claims**



A mini-bike transmission or the like embodies a planetary gear structure in which the sun gear and a carrier for the planet gears freely rotate on a driven shaft. A clutch element keyed to said shaft is shiftable axially thereof to selectively clutch the sun gear and planet gear carrier to the shaft such that an output sprocket which is fixed to the carrier turns with rotation of the driven shaft, the clutch having an intermediate neutral position where neither the sun gear nor the carrier is clutched and the driven shaft rotates free thereof.

3,811,343

GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

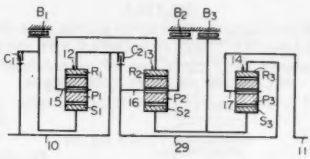
Division of Ser. No. 30,496, April 21, 1970. This application Sept. 13, 1972, Ser. No. 288,495

Claims priority, application Japan, June 4, 1969, 44-43275

Int. Cl. F16h *57/10*

U.S. Cl. 74—759 **2 Claims**

Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear



train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,811,344

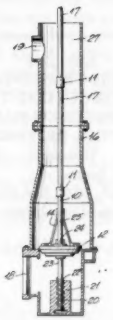
HYDRANT REPAIR TOOL

Robert G. Hand, Sauk Village, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed July 18, 1972, Ser. No. 272,792

Int. Cl. B25b *13/00, 13/02, 13/56*

U.S. Cl. 81—90 E **1 Claim**



A tool for the removal and replacement of the stem and valve seat of a hydrant, consisting of a drive member which is designed to latch into the upper surface of an otherwise disconnected hydrant lower valve stem. The tool may be fastened to the conventional upper hydrant valve stem, and serve to rotate the disconnected lower valve stem free of its mating threads. The lower valve stem, after being freed of threaded engagement is brought to the top of the hydrant by the application of water pressure from the hydrant supply pipe.

3,811,345

ADAPTIVE CONTROL SYSTEM FOR NUMERICAL CONTROL

Kengo Kobayashi, Kawasaki; Seiichi Hattori, Tokyo, and Masaharu Tamura, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Dec. 27, 1971, Ser. No. 211,891

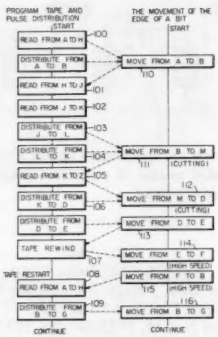
Claims priority, application Japan, Dec. 31, 1970, 45-123266

Int. Cl. B23b *3/00*

U.S. Cl. 82—2 B **5 Claims**

Adaptive control system for a numerical control machine tool like a lathe with a control program which contains the information about the outline of raw workpiece prior to blocks commanding the desired outline of the manufactured work-

piece. The length of movements of the bit of said machine towards the direction of the center of said workpiece at the beginning of the cutting is controlled in a manner such that the cutting depth of said bit is shorter than the length of the cutting edge of said bit, and the load of said machine in the



cutting operation is controlled so as to be equal to the upper limit of the allowable load. The system of the present invention provides prevention of damage to the bit, a shorter manufacturing time and improved operation efficiency of said machine.

3,811,346

BOX-SHAPED GUIDE BUSHING AND DRIVING CONTROL UNIT FOR CUTTING TOOLS FOR HEAD STOCK MOVING TYPE SCREW MACHINES ENCASING CUTTING TOOL DRIVING SYSTEM

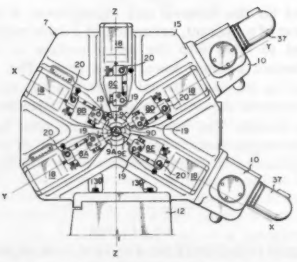
Takayuki Nomura, Tanazaua 437 Okutamamchi, Nishitamagun, Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,153

Claims priority, application Japan, Dec. 23, 1970, 45-117990

Int. Cl. B23b *21/00*

U.S. Cl. 82—25 **2 Claims**



In a head stock moving type automatic screw machine, a guide bushing including a frame therefor made in a hollow box shape, cutting tool rests disposed radially on the frame with work centrally positioned, a power source for the driving cutting tool rests being directly mounted on the frame for the guide bushing and means to permit at least two cutting rests opposedly disposed with the work centrally positioned to be driven in common with utilization of normal and inverse revolution of the motor and at the same time providing that several other cutting tool rests be driven in common by the motor output into another system encased in the same box-shaped frame; the automatic screw machine including numerical control arrangements for driving of the cutting tool rests.

3,811,347

DEVICE FOR STRIPPING HOSES

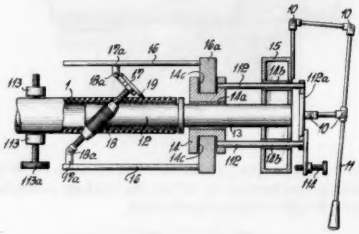
Hans Heckhausen, Rubensweg, Germany, assignor to Firma E. & F. Horster, Solingen, Germany

Filed Jan. 7, 1972, Ser. No. 216,051

Claims priority, application Germany, Aug. 4, 1971, 2138914

Int. Cl. B26d *3/00*; **B23b** *3/22*

U.S. Cl. 83—1 **4 Claims**



A device for stripping the covering layer off hoses, particularly near the end of the hose for accommodating a union, said device using a cutting mechanism acting on the periphery of the hose and a feed mechanism for displacing the cutting mechanism with respect to the hose along a longitudinal direction, and a drive mechanism for producing rotary displacement between the cutting elements and the hose surface to be stripped.

3,811,348

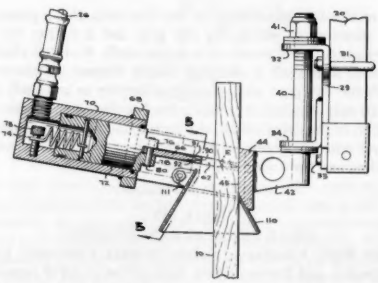
SURVEYING APPARATUS WITH CUTTER

Robert L. Brown, 881 George Washington Hwy. Lot 28, Chesapeake, Va.

Filed June 5, 1973, Ser. No. 367,187

Int. Cl. B26d *5/12*

U.S. Cl. 83—13 **12 Claims**

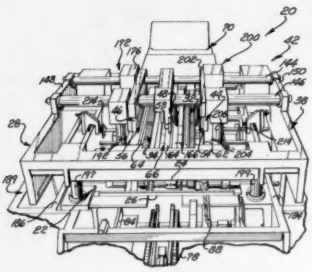


An apparatus and method of providing surveyor stakes having a top end termination indicative of a desired elevation is disclosed comprising a hydraulic cylinder connected to a cutting blade supported on the lower end of a levelling rod movable adjacent a surveyor's stake while being monitored through a transit with the hydraulic cutting means being actuated by a manual hydraulic pump carried by the user when the blade is observed to be positioned at a desired elevation to cut the top of the stake and provide a resultant stake having a top end termination of the desired elevation.

3,811,349
METHOD OF SHAVING
Joseph W. Jennings, Box 208, Star Rt.1, Spring Branch, Tex.
Continuation-in-part of Ser. No. 143,261, May 13, 1971. This application May 2, 1973, Ser. No. 356,506
Int. Cl. B26d *7/08*
U.S. Cl. 83—14 **4 Claims**

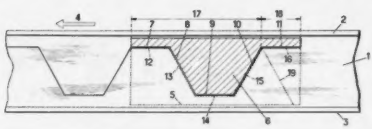
A method of shaving which comprises applying to the skin, a solid aqueous solution of a selected high molecular weight water soluble polymer and thereafter passing a blade type razor over the skin to shave off unwanted hair.

3,811,350
SHEET MATERIAL TRIMMING METHOD AND APPARATUS
John J. Marciniak, Berea, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed July 12, 1972, Ser. No. 270,980
Int. Cl. B23d *31/00*
U.S. Cl. 83—39 **15 Claims**



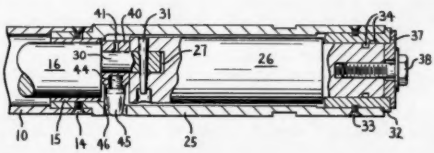
An improved apparatus for trimming sheet material assemblages along face, head and foot edge portions includes a face knife located at a first trimming station and head and tail or foot knives located at a second trimming station which is spaced from the first trimming station. After a sheet material assemblage has been registered in a predetermined orientation relative to the knives at the first trimming station, the sheet material assemblage is clampingly gripped adjacent to its head and foot portions by two parallel sets of positively driven conveyor belts, i.e., timing belts, which extend from the first trimming station through the second trimming station toward a delivery station. After a sheet material assemblage has been gripped at the first trimming station by upper and lower belts of each set of conveyor belts, the face knife trims the face edge portion of the sheet material assemblage. An intermittent drive mechanism is then activated to drive the conveyor belts through a feed stroke to move the sheet material assemblage from the first trimming station to the second trimming station. At the same time, a next succeeding sheet material assemblage enters the first trimming station and is registered in a predetermined orientation relative to the knives. All three of the trim knives are then simultaneously moved through trimming strokes to trim the head and trail or foot edge portions of the leading sheet material assemblage at the second trimming station and to trim the face edge portion of the trailing sheet material assemblage at the first trimming station. The conveyor belts clampingly hold the leading sheet material assemblage in registered orientation relative to the knives as it is moved from the first trimming station to the second trimming station and as it is trimmed at the second trimming station. Each set of the conveyor belts is mounted in a fixed spatial relationship with the associated one of the head and foot trim knives and can be moved transversely to the path of travel of the sheet material assemblages with the associated trim knife to adjust the distance between the head and foot trim knives to accommodate sheet material assemblages of different sizes. A center trim knife is mounted intermediate the head and foot trim knives for two-up cutting.

3,811,351
METHOD AND APPARATUS FOR CUTTING SAW-TEETH FROM THE WEBS OF STRUCTURAL SHAPES
Gabriel Henri Connac, 10, rue Grenet, Vichy, France
Filed Mar. 21, 1973, Ser. No. 343,209
Claims priority, application France, Mar. 24, 1972, 72.10398
Int. Cl. B23d *15/08, 23/00*
U.S. Cl. 83—49 **3 Claims**



Saw-teeth are cut from webs of structural shapes which are to be reconnected in a conventional manner at the tips of the teeth so as to form light beams having a high moment of inertia. The method consists in cutting the web of the shape step-by-step between two tools, each comprising two zones, one of which is a shearing zone proper extending along the length equal to one pitch of the saw-teeth and in which each cutting edge of a tool is substantially parallel to the corresponding edge of the other tool and the other of which is a transition zone immediately preceeding the cutting zone and in which the corresponding cutting edges diverge.

3,811,352
MUFFLER AND MUFFLER CORE PUNCHER
Lawrence D. McFadden, 3915 N.E. Stanton, Portland, Oreg.
Filed Apr. 26, 1973, Ser. No. 354,678
Int. Cl. B26d *3/00;* **B23d** *21/14*
U.S. Cl. 83—54 **7 Claims**



The muffler has an outer shell filled with fiberglass wool around a central core tube which conveys the exhaust gases. The core tube is punched from the inside to form a spiral pattern of holes having gas deflecting tongues which project outward in circumferential directions opposed to the direction of the spiral. When the muffler is to be used on an engine producing a stream of exhaust gas having clockwise rotation in the core tube, the spiral pattern of holes is clockwise and the gas is discharged from the holes in counterclockwise directions. For a counterclockwise rotating gas stream the spiral pattern of holes is formed in counterclockwise direction and the tongues deflect the gas from the holes in clockwise directions.

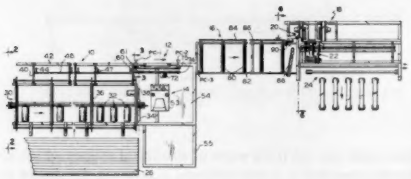
The holes are punched and the deflecting tongues are formed by a radial punch which reciprocates through a guide hole in a support tube. The punch is mounted on a crankshaft which rocks the punch back and forth as it is projected and retracted. When a core tube is placed on the support tube the rocking motion of the punch rotates the core tube to properly

space the holes circumferentially. By slowly moving the core tube axially, the desired spiral pattern of holes is produced. The direction of the spiral, as a right-hand or left-hand thread, is determined by the direction of rotation of the crankshaft.

3,811,353
APPARATUS FOR CUTTING LUMBER TO SPECIFIED CLEAR LENGTHS

Thomas R. Miles, Portland, Oreg., assignor to Edward Hines Lumber Co., Hines, Oreg.

Division of Ser. No. 214,011, Dec. 30, 1971. This application Jan. 8, 1973, Ser. No. 321,847
Int. Cl. B27b *27/10, 5/06*
U.S. Cl. 83—71 **7 Claims**



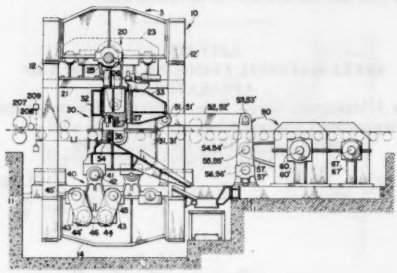
A piece of lumber is fed flat to the infeed end of a marking station, tilted on edge and driven endwise into the marking station where defects in the piece are detected and marked with a retroreflective material. The marked piece moves to a defect-cutting station where it is driven endwise past a pair of defect-cutting saws until a marked defect is sensed between the saws to stop movement of the piece and actuate the saws to remove the defective section. The clear piece downstream of the saws is measured and, if longer than a minimum length range, diverted to a cut-to-length saw station. If within the minimum length range, it is diverted to a "core block" sort. If shorter than the minimum range, it is diverted to junk. The piece upstream of the saws is measured and diverted in the same manner as the downstream piece except that upstream pieces longer than the minimum length range resume travel past the defect saws. Long-length sensors at the defect station determine if a piece contains any one of several specified defect-free long lengths and if so, set a stop downstream of the defect saws corresponding to the longest specified clear length sensed and then actuate only one of the defect saws to cut the piece to such length when the piece reaches the set stop. Such piece is then diverted directly to a sorting station. Random length clear pieces transferred to the cut-to-length station are pressed against a series of depressible stop-sensors determining various specified lengths, driven endwise over the stop-sensors past a length saw until one of the stop-sensors is released, then driven in reverse against the released stop. The length saw then strokes to cut the piece to specified length, after which the piece is sorted according to length as determined by the released stop-sensor.

3,811,354
FLYING SHEAR FOR CUTTING STOCK INTO DESIRED SECTIONAL LENGTHS

Junihiro Ito, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kyogo, Japan

Filed Jan. 3, 1972, Ser. No. 214,991
Claims priority, application Japan, Dec. 31, 1970, 45-126374
Int. Cl. B23d *25/04*
U.S. Cl. 83—320 **2 Claims**

A flying shear, adapted to be installed in the shearing line at the finished end of the heavy plate rolling mill plant for shearing metal plates in various lengths, having a stationary outer housing mounted on the bed plates, a pair of upper knife holder drives which are mounted on the outer housing and drive an eccentric cam shaft journaled on the outer housing for lifting and lowering an upper knife holder, a shiftable inner shear housing moving parallel to the traveling stock and being disposed inside of the outer housing, the inner shear housing guiding the liftable upper knife holder and carrying a lower knife holder to effect a shearing action between the upper knife holder, a pair of shifting supports bearing on the outer housing for supporting the inner shear housing, and a pair of

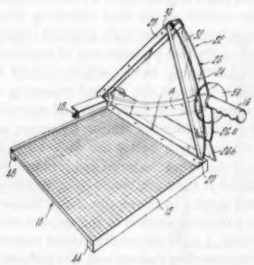


shifting drives mounted on the bed plates for reciprocating the inner shear housing in synchronism with the traveling stock at the time of cutting. The upper knife holder is adapted to reciprocate both elevationally and laterally, and is connected to the eccentric cam shaft for rotating the output shaft of the upper knife holder driving device that is arranged in a stationary manner by a connecting rod. Thus, the desired sectional length of stock is provided by the simple structure of the flying shear.

3,811,355
PAPER CUTTER GUARD

Richard D. Cole, Gay Street, Sharon, Conn.

Filed Nov. 10, 1972, Ser. No. 305,484
Int. Cl. B26d *7/22*
U.S. Cl. 83—520 **10 Claims**



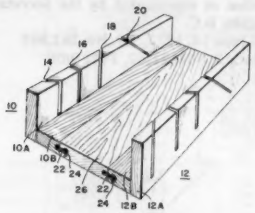
A protective guard is presented for attachment to and use with cutting boards of the type having a blade pivotally mounted at the side of the cutting board. The guard is a transparent sleeve extending along both the inboard and outboard sides of the blade to form a pocket in which the blade travels. The inboard part of the sleeve is spaced above the cutting board to allow passage of the material to be cut, and the outboard part of the sleeve has a hinged lower portion to allow passage of the material to be cut. A disc guard also surrounds the blade handle at the location where the blade handle extends from the protective sleeve.

3,811,356

MITER BOX OF VARIABLE WIDTH

Mark Wyler, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,892
Int. Cl. B27g 5/02
U.S. Cl. 83—762 4 Claims



A miter box having parallel vertical horizontally elongated side members having spaced saw kerfs arranged in aligned pairs and having a horizontal bottom portion formed by two mating horizontally elongated horizontal members detachably engagable in abutting coplanar relationship wherein means are provided for detachable insertion between said horizontal members to enlarge the width of the box.

3,811,357

MUSICAL INSTRUMENT SUPPORT

Merlin D. Stewart, 429 Beechwood Ave., Haddonfield, N.J.

Filed Jan. 26, 1973, Ser. No. 327,138
Int. Cl. G01d 3/00
U.S. Cl. 84—327 1 Claim

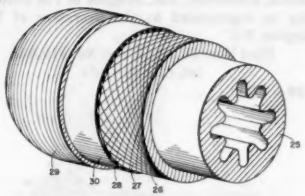
A device for supporting a musical instrument on a chair upon which a musician is sitting. The instrument supporting device includes an extended rod having channels formed therein and passing around a peripheral boundary of the rod. A first instrument grasping mechanism is mounted to the rod member and an appendage of the musical instrument. A second instrument grasping mechanism is mounted to the instrument and the rod member and threadedly engages a thumbscrew. The thumbscrew passes through a clamp of the second grasping mechanism and is insertable within a channel formed on the rod for fixedly positioning the support device with respect to the instrument.

3,811,358

SOLID PROPELLANTS CONTAINING REINFORCING FILAMENT AND PROCESS OF MAKING

Charles P. Morse, Pacific Palisades, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 10, 1961, Ser. No. 144,265
Int. Cl. C06d 5/06; F42b 1/00
U.S. Cl. 86—20 R 10 Claims



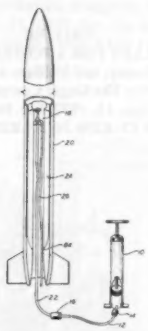
1. A propellant grain comprising a solid decomposable polymeric matrix and a reinforcing metal filament lattice supported in said matrix to improve the tensile strength thereof, said lattice comprising at least one continuous metal filament element wherein each filament primarily traverses a direction which is not parallel to any plane of symmetry in said matrix, said lattice selected from the class consisting of metals of Group II-A through Group IV-A, Group I-B through VII-B, and Group VIII of the Periodic Table.

3,811,359

APPARATUS FOR REMOTE IGNITION OF EXPLOSIVES

Vincent P. Marchese, Lake Hiawatha, and Edward L. Rakowsky, Kinnelon, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Dec. 18, 1972, Ser. No. 316,132
Int. Cl. F41f 3/04
U.S. Cl. 89—1.813 11 Claims



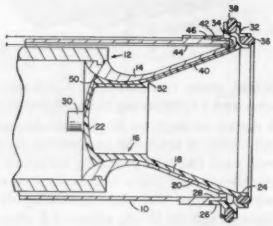
Disclosed herein is a unique non-electric ignition device for sounding rockets, explosives or the like which involves energization of a fluidic conversion device embedded in the explosive charge to be ignited. The fluidic device, consisting essentially of a convergent nozzle and resonance tube, is connected through pneumatic tubing to a remotely located pump, valve, filter network. When operated, this network develops a pre-ignition pressure level which eventually reaches a threshold level sufficient to open a relief valve. At threshold the pressurized gas is applied to the convergent nozzle, which directs the gas toward the opening of the resonance tube. A system of self-sustaining oscillations of the gas particles is created in the tube which causes the closed end of the tube to rise in tem-

perature. The end of the tube is surrounded by a pyrotechnic-ignition interface which ignites when the tube end temperature reaches a predetermined level. This interface then ignites the main propellant resulting in the firing of the sounding rocket, detonation of the explosive, or the like.

3,811,360
ROCKET HOLD BACK AND TUBE CLOSURE

Earl C. Ricks, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of The Army, Washington, D.C.

Filed Nov. 28, 1972, Ser. No. 310,065
Int. Cl. F41f 3/04
U.S. Cl. 89—1.807 **4 Claim**

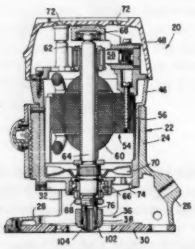


This invention comprises a plastic insert which is inserted into the rear end of a missile and acts as a detent to retain the missile in the launch tube as well as a protective end closure for both the missile and launch tube.

3,811,361
COLLET FOR A POWER TOOL

Robert W. Seely, Easley, and William A. Batson, Pickens, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,090
Int. Cl. B23b 31/20; B23c 1/20
U.S. Cl. 90—12 D **1 Claim**

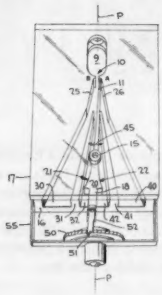


A collet for a power tool such as a router which has a lockable armature shaft, the lower end of which is externally threaded and internally bored so that it may be fitted with an interconnected nut and split sleeve combination. The split sleeve fits within the internal bore of the shaft whereby on turning of the nut in one direction the sleeve will be compressed to lock the shank of a bit within its central aperture. To remove the bit the nut is turned in the opposite direction to jack the sleeve away from the shaft.

3,811,362
MOVING SPLITTER FLUIDIC DEVICE

Kenneth E. Woodward, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 14, 1972, Ser. No. 262,901
Int. Cl. F01l 21/02; F01c 9/00
U.S. Cl. 91—232 **9 Claims**



A Moving Splitter Fluidic Device for converting linear fluidic motion into angular mechanical motions comprising a power orifice for projecting a jet of fluid into a channel having two side bleed channels and a moving pivoted splitter located thereinbetween. The splitter, the two bleed channels, and the channel itself are bilaterally and symetrically disposed about the central longitudinal axis of the main channel. The moving splitter oscillates about its pivot axis and this oscillatory motion is converted into angular mechanical motions by means of a rachet wheel assembly wherein a pair of tangs, pi radians apart, engage said wheel and are connected respectively at the top base and at the bottom base of the splitter. The jet issuing from the power orifice moves alternatively through a channel formed by a side of the splitter and the inner surface of an inside wall next to the splitter. The momentum of the jet moving into the associated channel is transferred to the splitter, due to the configuration of the splitter beyond the pivot, causing the splitter to move to its alternate position. The above sequence of the events occur alternatively on each side of the splitter causing it to oscillate.

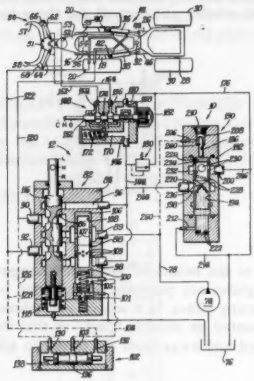
3,811,363
PRIORITY SYSTEM FOR SERIES-TYPE HYDRAULIC CIRCUITS

John R. Cryder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 10, 1973, Ser. No. 359,195
Int. Cl. F15b 11/00; F01b 21/02
U.S. Cl. 91—412 **11 Claims**

A priority system for series-type hydraulic circuits including a plurality of hydraulic work systems disposed in serial fluid communication with a source of fluid under pressure and a priority valve operatively associated with a supply line between two of the work systems operatively dividing them into upstream and downstream work systems and responsive to fluid pressure between the source and the upstream system in excess of a predetermined pressure level automatically to

reduce pressure in the downstream work system and maintain a predetermined minimum pressure differential between the

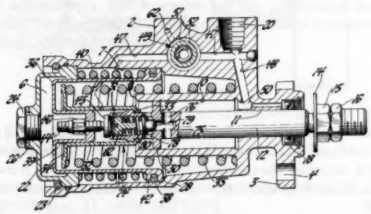


downstream and upstream systems when they are operated simultaneously to insure positive actuation of the upstream system.

3,811,364
HYDRAULIC ACTUATOR

Ronald L. Harkrader, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1972, Ser. No. 301,671
Int. Cl. F01b *7/02, 31/00*
U.S. Cl. 91—422 **5 Claims**



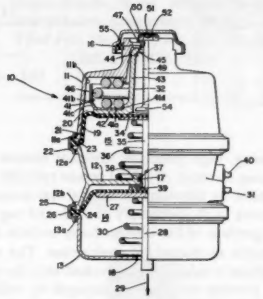
A hydraulic actuator has two cylinder and piston motors of different area with the smaller piston connected to a piston rod and the larger piston capable of abutting the smaller piston. Preloaded springs bias the pistons toward each other. Servo fluid delivered between the pistons first moves both pistons a limited distance in one direction and then moves the smaller piston a larger distance in the other direction. The device may be double-acting, in which case servo fluid may be applied to drive the pistons on the return stroke.

3,811,365
BRAKE MECHANISM

Douglas M. Gordon, Allentown, Pa., and Thomas H. Phimister, Dearborn, Mich., assignors to Indian Head, Inc., New York, N.Y.

Continuation of Ser. No. 180,014, Sept. 13, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,363
Int. Cl. F01b *7/00*
U.S. Cl. 92—63 **2 Claims**

A brake-actuating mechanism for use in a pneumatic brake system is disclosed. The mechanism includes an emergency chamber having an upper actuating chamber with a narrowed neck portion and a service chamber with diaphragms sealed in each chamber. A push rod engages both diaphragms and the mechanism includes an axially mounted brake-operating rod and suitable fluid conduits communicating with the chambers. An actuating spring is disposed in the emergency chamber for urging a piston therein having a flat bearing plate portion and an integral upstanding pilot boss and the emergency

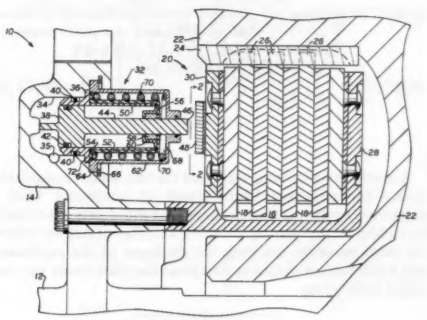


diaphragm in contact therewith from a cocked position toward a wall separating the chambers. Means are associated with the spring and the emergency chamber for shielding the emergency diaphragm from contact with the spring while axially guiding and aligning the piston and actuating spring while the actuating spring moves the piston from the cocked position toward the wall and compressed air moves the piston toward the cocked position away from the wall.

3,811,366
COMBINED PISTON-RETURN MECHANISM

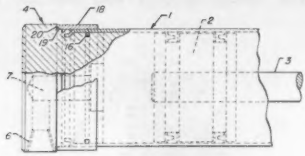
William J. Angelis; Robert E. Berger, both of North Canton, and Robert E. Conkey, Barberton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Summit, Ohio

Filed Mar. 31, 1972, Ser. No. 240,183
Int. Cl. F01b *31/00*; **F15b** *15/26*
U.S. Cl. 92—130 **3 Claims**



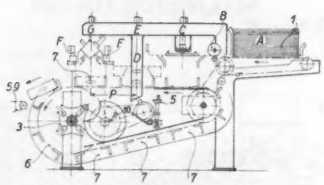
A brake actuating piston which includes a return mechanism for moving the piston to its at rest position when brake pressure is released. The piston moves in a cylindrical sleeve. A cylindrical spring holder surrounds the sleeve and is connected to the piston stem by a friction grip. A coil spring carried by the holder is compressed when the piston is moved toward the applied position and expands upon release of brake pressure to move the holder and the piston back to their at rest positions.

3,811,367
FLUID POWER CYLINDER CONSTRUCTION
Charles W. Bimba, 101 Main St., Crete, Ill.
Filed May 1, 1972, Ser. No. 249,346
Int. Cl. F16j 15/18
U.S. Cl. 92—165 2 Claims



A non-loosening, high pressure resistant system for connecting an end cap member of a fluid power cylinder to the tubular body section by providing a special flat-bottomed and sloping wall groove in the periphery of each end cap and then rolling the end portion of the tubular body section down into the groove to make an assembled connection. The rolled end of the body section is subsequently locked into the groove of the end cap to provide longitudinal strength by rolling a narrow shoulder portion of the end cap down thereover, while still further circumferential and longitudinal strength is provided by having a press-fit band encompass the rolled and engaged portions of the tubular body section and the end cap.

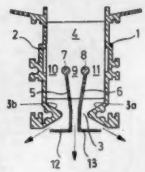
3,811,368
MACHINE FOR FORMING CONTAINERS, TRAYS AND THE LIKE OUT OF CORRUGATED CARDBOARD OR SIMILAR
Giorgio Bragaglia, 33/2 Via Pelagio Palagi, and Francesco Grossi, 75 Via S. Stefano, both of Bologna, Italy
Filed May 3, 1972, Ser. No. 249,888
Claims priority, application Italy, May 5, 1971, 3421/71
Int. Cl. B31b 17/00, 1/76
U.S. Cl. 93—55 10 Claims



A machine for forming trays and the like, which comprises a device for removing blank sheets of cardboard from a magazine, another device for inserting the sheets individually into a hopper for forming the sides, a further device for folding the sides inwardly, doubling the thickness of the cardboard, and a still further device to compress the folds inside the container folding tray.

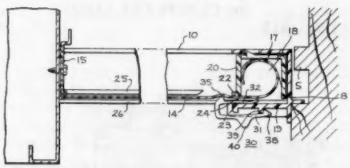
3,811,369
AIR OUTLET FOR VENTILATION EQUIPMENT
Max Ruegg, Ruti, Switzerland, assignor to Hess & Cie Metallwarenfabrik
Filed Sept. 5, 1972, Ser. No. 286,425
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D 3 Claims

An air outlet or diffuser includes a duct having an air inlet, rigid walls and an open outlet side. At least two guide plates having an L-shape are mounted to pivot on axes which are within the duct. The plates extend toward and through the outlet, dividing the air flow into three flows. By pivotal adjustment of the plates, the spacing between the plates and between the plates and the sidewalls is altered, adjusting the direction and relative volumes of the three partial flows. A



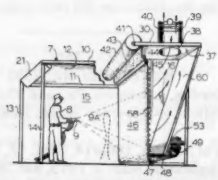
constriction at the mouth of the outlet cooperates with the plates. The plates are provided with angled portions which have a deflecting effect. In a second embodiment the pivotal axes are mounted on slidable blocks so that the axes can be moved toward and away from the outlet to adjust total flow volume.

3,811,370
ROOM AIR CONDITIONER MOUNTING ARRANGEMENT
Ray W. Boston, Jr., Louisville, and Larry D. Potts, Jeffersontown, both of Ky., assignors to General Electric Company, Louisville, Ky.
Filed Feb. 14, 1973, Ser. No. 332,282
Int. Cl. E06b 7/02
U.S. Cl. 98—94 10 Claims



A room air conditioner window mounting arrangement provided with an extendable frame carrying a self-coiling sheet material includes sheet-engaging latching means for preventing the sheet material from recoiling when the frame is extended.

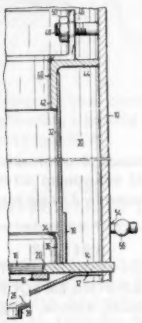
3,811,371
PAINT SPRAY BOOTH
Sheila Hardy, 400 North Ave., Bartlett, Ill.
Division of Ser. No. 75,843, Sept. 28, 1970, abandoned. This application May 8, 1972, Ser. No. 251,087
Int. Cl. F23j 11/00
U.S. Cl. 98—115 SB 6 Claims



A paint spray booth, including side and top walls, the top wall having a vent opening, means for supporting a roll of cur-

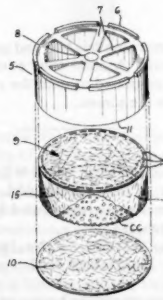
tain material, consisting of a layer of non-woven fabric and a scrim of woven material, outside and above said booth, a portion of the said material of said roll, extending downwardly to form one wall of said booth, another portion of said material extending rearwardly and away from said first roll to a collapsible recovery shaft positioned outside of the paint spray area.

3,811,372
STRAINING VAT AND PROCESS
Conrad Lenz, Annenhofstrabe 2, 805 Freising, Germany
Division of Ser. No. 162,802, July 15, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,580
Int. Cl. C12c 7/10
U.S. Cl. 99—277.1 **17 Claims**



In a straining vat there is provided a perforated bottom and a wort outlet below said bottom. In a straining vat of this type the cooked mash is brought into the vat and is separated in the vat in its two constituents, i.e., draff and wort. The draff are solid constituents which remain on the perforated bottom, whereas the wort passes through the perforated bottom and is withdrawn through the outlet.

3,811,373
BEVERAGE MAKING DEVICE
Paul Telco, Hatfield, Hertfordshire, England, assignor to Telco (Group Management) Limited, Hertfordshire, England
Filed Oct. 22, 1971, Ser. No. 191,876
Claims priority, application Great Britain, Oct. 28, 1970, 51219/70; Dec. 21, 1970, 60572/70
Int. Cl. A23f 1/00; B65b 29/02
U.S. Cl. 99—295 **12 Claims**

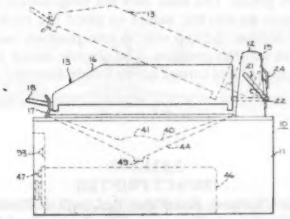


A beverage producing device comprising a receptacle for liquid and an envelope containing a predetermined quantity of finely divided beverage producing material e.g., coffee grounds sufficient for a single cup of coffee, the envelope being arranged in press fit sealing engagement with an envelope supporting portion of the receptacle and having a wick to assist in conveying liquid through the envelope. A dished lid serves as a tray for the receptacle after use.

3,811,374
COOKING APPARATUS
Douglas G. Mann, Boston, Mass., assignor to Clambake International, Incorporated, Cambridge, Mass.
Filed Feb. 16, 1973, Ser. No. 333,303
Int. Cl. A47j 27/04
U.S. Cl. 99—341 **16 Claims**

A cooking apparatus designed for a large clambake. The cooking apparatus includes a large bowl-shaped cooking vessel, supporting legs, a burner to heat the cooking vessel, and a flexible inflatable hood affixed to the cooking vessel rim. As the heated broth liquid in the bottom of the vessel changes to steam, the hood inflates to confine and thereby slightly pressurize the broth steam so that it permeates the entire stack of food being cooked.

3,811,375
ELECTRIC BROILER
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company, Indianapolis, Ind.
Filed May 16, 1972, Ser. No. 253,803
Int. Cl. A47j 37/06
U.S. Cl. 99—425 **10 Claims**



A broiler includes a grill assembly which is rotatably mounted for movement between a cooking position and a cleaning position. There is a latching arm which moves into interferring relationship with the grill assembly when the grill assembly is moved to its cleaning position for holding the grill assembly in this position. The latching arm is manually movea-

ble out of the interferring relationship to allow return of the grill assembly to its cooking position. Electrically energized heating elements for heating the grill are connected to a source of electric energy through a control circuit. A first branch of the control circuit, including a regulator for limiting the effective, amount of electric energy provided to the heating elements, is used during cooking. A second branch circuit allows full available electric energy to be provided to the heating elements and includes a position sensitive switch mounted from the grill assembly. The position sensitive switch is closed only when the grill assembly is in its cleaning position. The grill assembly is rotatably mounted to the top portion of a housing which has a grease receptacle in its lower portion. A heat reflector, in the form of a dished sheet, is mounted in the open top of the housing below the grill. A similarly dished shaped grease guide is positioned between the heat reflector and the grease receptacle. The heat reflector and grease guide have mutually offset openings and the opening in the grease guide is in direct communication with the grease receptacle.

3,811,376

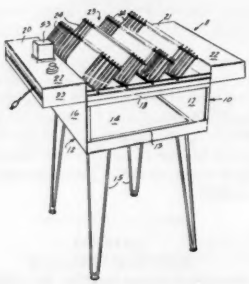
AUTOMATIC FOOD HOLDING AND TURNING APPARATUS

Archie W. Mills, 2941 S. Michigan Ave., Chicago, Ill.

Filed Mar. 13, 1972, Ser. No. 233,964

Int. Cl. A47j *37/00*

U.S. Cl. 99—427 **1 Claim**



A barbecue rack for holding and turning foods to be cooked over a heat source, the rack having a plurality of parallel ranked U-shaped cross-section racks which are normally positioned above the fire pit at an angle of approximately 45°. The racks are pivotably mounted on slide bars with projections held in fixed pivots. The slide bars are longitudinally movable in response to an electric motor to pivot the racks approximately 90° so that the top side in one position becomes the lower side in another position. The electric motor is actuated by a timer control and turned off by a slide actuated switch.

3,811,377

IMPACT PRINTER

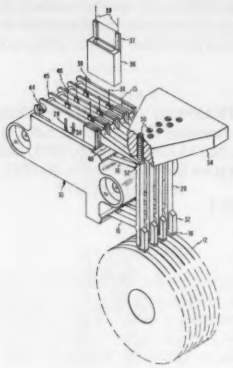
Paul Marlin Charlson; Karel den Tex, both of Rochester, and Conrad Ferdinand Fingerson, Chatfield, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,249

Int. Cl. B41f *9/06*

U.S. Cl. 101—93 C **7 Claims**

An impact printer has hammer banks formed in a single plastic molding operation wherein hammer mounting flexures, hammer wear plates, magnet cores and shields are inserts in a single molding. Cooperating cantilevered snap in armatures



are retained by elastomer pivot members and an adjustment bar carries individual adjustment screws which are locked against undesired rotation by a single wire element.

3,811,378

ROTARY SCREEN PRINTING WITH INTERNALLY DRIVEN ROLLER SQUEEGEE

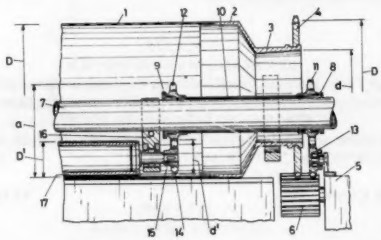
Walter Bohm, Kirchbichl, Austria, assignor to Peter Zimmer, Kufstein, Austria

Filed June 21, 1972, Ser. No. 264,988

Claims priority, application Austria, June 22, 1971, 5381/71

Int. Cl. B41f *15/42, 15/44*

U.S. Cl. 101—120 **3 Claims**



A screen printing machine has two end pieces with a rotary screen attached thereto. A color tube extends axially inside the screen. A shaft positioned around the color tube drives a roller squeegee within the screen.

3,811,379

ENCAPSULATED TORPEDO MINE WEAPON SYSTEM

Allen J. Sondheimer, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

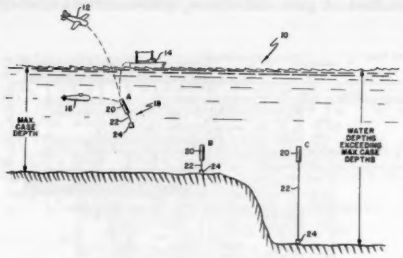
Filed June 23, 1972, Ser. No. 265,936

Int. Cl. B63f *3/02*

U.S. Cl. 102—13 **11 Claims**

An underwater weapons system having an encapsulated torpedo and an anchor assembly which may be planted in the water by a submarine, aircraft, or surface ship. Shortly after water-entry the anchor separates, leaving the encapsulated

torpedo vertically moored at a predetermined depth. Detection equipment on the casing listens passively for a target, and upon target detection, an active transducer is activated to



classify the potential target. Upon classification, the casing opens, releasing and activating a homing torpedo having self-contained target-seeking capabilities.

3,811,380

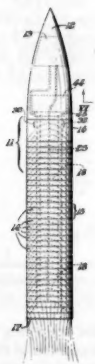
ROCKET AND PROPELLANT THEREFOR

John P. Glass, c/o Cava Industries, 79 La Grange Ave., Essington, Pa.

Continuation-in-part of Ser. Nos. 712,260, Jan. 30, 1958, abandoned, and Ser. No. 300,479, Aug. 7, 1963, abandoned, and Ser. No. 508,640, Oct. 23, 1965, abandoned. This application Jan. 23, 1968, Ser. No. 720,429

Int. Cl. F42b *15/00*

U.S. Cl. 102—49.7 **15 Claims**



A rocket and propellant therefor comprising a body portion formed of a plurality of rings arranged in abutting relationship to form an enclosing wall having a nose and a tail end, a rocket motor positioned within the wall and including a solid propellant arranged in layers with each layer connected to one of the rings, a series of foraminous screens embedded in the propellant and presenting a concave surface to the tail end of the rocket and focusing the propellant gases on the tail end which is adapted to have a burning surface that travels toward the nose end when the rocket is in flight, said screens also controlling the shape of the burning surface by spreading it laterally. The rocket also includes means for controlling the distance of travel by extinguishing the burning surface, means for re-igniting the extinguished rocket including an electrical circuit having wires which connect with a slow-burning fuse layer, and steering means which includes an auxiliary propellant that is discharged through clusters of pipes to change the mass or energy at one side of the rocket tail to swing the tail around and change the direction of rocket travel.

3,811,381

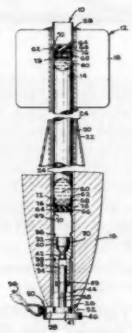
SMOKE SPOTTING CARTRIDGE

Arthur A. Fichter, Jr., Saratoga; Ronald D. Danks; Farrell G. Larsen, both of San Jose, and Guy C. Throner, Jr., Saratoga, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Mar. 16, 1972, Ser. No. 235,274

Int. Cl. F42b *13/14, 13/44*

U.S. Cl. 102—66 **3 Claims**



A smoke spotting cartridge adapted upon ejection to propel a smoke forming chemical or the like high into the air for ease in spotting.

3,811,382

PROCESS FOR PACKING AND LEVELING RAILWAY TRACKS AND DEVICE FOR PERFORMING THE SAME

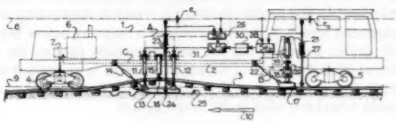
Jean-Edouard Buchter, Paverne, and Hans-Peter Jaeggi, Prilly, both of Switzerland, assignors to Matisa Material Industriel S.A., Crissier, Switzerland

Filed June 19, 1972, Ser. No. 263,974

Claims priority, application Switzerland, July 7, 1971, 9953/71

Int. Cl. E01b *27/17*

U.S. Cl. 104—7 R **13 Claims**

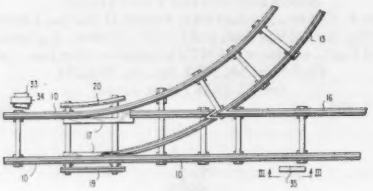


This invention is for a highly efficient process and device for packing railway tracks by compacting ballast beneath the sleepers by a continuous forward movement along the section of the track to be packed, and comprises simultaneously performing two interdependent operations in two different zones, namely in a first zone introducing ballast beneath the sleepers and forming for said sleepers a new support surface, and in a second zone vertically tamping this support surface by applying to the rails and sleepers a vertical pulsating force.

3,811,383
CAR SWITCHING SYSTEM

Neil William Butzow, Greendale, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 14, 1972, Ser. No. 306,487
Int. Cl. E01b 25/06
U.S. Cl. 104—130 5 Claims

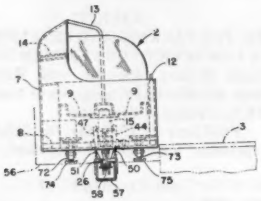


A car switching system for an operator-less railway transportation system in which the track is stationary and the switching is accomplished by a mechanism mounted on the cars. This mechanism may consist of oppositely disposed cam followers mounted for vertical displacement on each side of the car and interconnected so that the cam follower or followers on one side are up, out of engagement with the track, when the cam follower or followers on the other side are down, in engagement with the track.

3,811,384
VEHICLE DRIVE

Newton D. Brown, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 10, 1972, Ser. No. 242,633
Int. Cl. B61b 13/00
U.S. Cl. 104—147 10 Claims



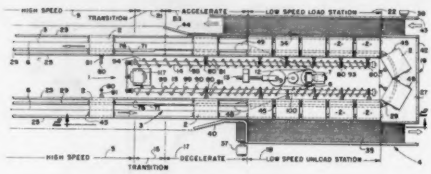
A variable speed drive mechanism in which the drive wheel has a radially extending driving surface and propels a vehicle at different speeds or changes the speed of the vehicle in response to the radial position at which a supporting rail engages the wheel. A moving cable in a raceway below the vehicle drives a pulley on the vehicle which rotates the drive wheel. The direction in which the vehicle is propelled is controlled by guide pulleys in engagement with the cable and by a guide wheel movable in the raceway slot.

3,811,385
TRANSPORTATION SYSTEM

Ernest D. Johnson, Tallmadge; Gerald D. Kirschner, Akron; Edward Kondrajian, Akron, and Gerald L. Woodling, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 29, 1973, Ser. No. 345,999
Int. Cl. B61b 13/00
U.S. Cl. 104—167 22 Claims

A vehicle drive system in which the vehicle is driven by a moving cable in a high speed portion of the system and by a rotating screw in a variable speed portion of the system. A spread groove configuration of the screw cooperating with a rotatable follower wheel supported by a spring-loaded arm pivotally mounted on the vehicle provides a smooth drive transition at the interface between the cable drive and the screw drive. A guide rail with a variable contour extending

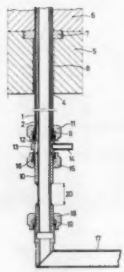


along the pathway of the system is engaged by fore and aft guide rollers on the vehicle for maintaining the position of the vehicle on the pathway and, in addition, actuating a cable clamping and releasing apparatus on the vehicle in the transition portion of the system. The guide rail also maintains the position of the vehicle at the turnaround where adjacent vehicles are connected at the radially inner corners of the vehicle.

3,811,386
TUYERE FOR INTRODUCING OXYGEN AND A PROTECTIVE MEDIUM INTO CONVERTER VESSELS

Helmut Knuppel; Karl Brotzmann, and Hans Georg Fassbinder, all of Sulzbach Rosenberg, Germany, assignors to Eisenwerke Gesellschaft Maximilianshutte m.b.H., Sulzbach Rosenberg, Germany

Filed Dec. 8, 1972, Ser. No. 313,377
Claims priority, application Germany, Dec. 9, 1971, 2160999
Int. Cl. F23i 1/00
U.S. Cl. 110—182.5 7 Claims



An improved system for supplying oxygen and a protective fluid to metal, below the surface of the metal, in refining vessels in which the tuyeres are connected separately to the supply of oxygen and the supply of protective fluid.

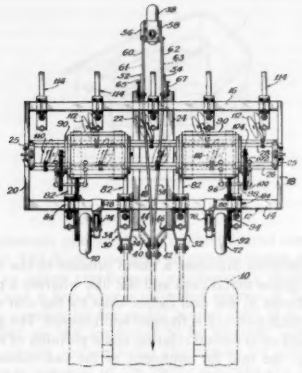
3,811,387
METHOD AND APPARATUS FOR MINIMUM TILLAGE FARMING

Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Continuation-in-part of Ser. No. 1,691, Jan. 9, 1970, abandoned. This application Jan. 9, 1973, Ser. No. 322,224
Int. Cl. A01c 19/00
U.S. Cl. 111—1 8 Claims

Tillage required and fertilizer and herbicide consumption is minimized by placing fertilizer deep in the soil in the fall

without thoroughly mixing the fertilizer and soil. The fertilizer is placed by first forming a deep channel, placing the fertilizer in the channel and forming a mound of dirt over the imbedded fertilizer. In the spring, seeds are planted in the top portion of the same mound. This method results in diminished weed growth and increased crop growth while using less amounts of



fertilizer and herbicides. The same basic mound structure is then maintained from year to year. The tillage, fertilization and cultivation are performed with a single, combination farm implement comprising a platform having a number of plows, bedders and fertilizer applicators mounted thereon in the fall. In the spring, the same platform has spreaders, planters and bedders for planting mounted thereon.

3,811,388

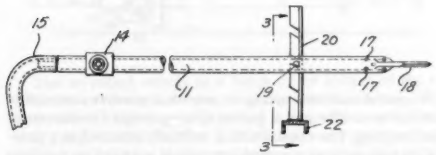
SUB SOIL IRRIGATOR AND TREE LIFT

William L. Campbell, Box 85, Whitewood, S. Dak.

Filed Aug. 15, 1972, Ser. No. 280,750

Int. Cl. A01c 23/02

U.S. Cl. 111—7.1 **2 Claims**



A sub soil irrigator and tree lift comprising an elongate hollow lever member having a piercing blade on one end thereof and a plurality of openings through the tubular lever adjacent the piercing blade. A water connection is provided at the opposite end of the lever to provide a flow of water through the lever and out the openings adjacent the piercing blade. A ground engaging fulcrum member adjustably and pivotally supports the lever at a point spaced from but adjacent the piercing blade. The piercing blade is engaged under the root system of the plant, tree or the like and water is provided through the tubular lever and simultaneously the lever is pressed downwardly at its opposite end to raise the plant to give greater penetration of the water for removing the plant or for properly watering the plant.

3,811,389

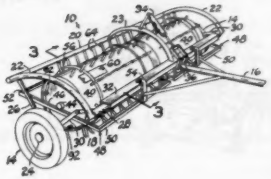
GRAIN DRILL

William L. Rother, deceased, late of Rt. 1, Cyril, Okla. (by Lucille S. Rother, administratrix)

Filed Apr. 27, 1973, Ser. No. 355,236

Int. Cl. A01c 5/04

U.S. Cl. 111—91 **6 Claims**



A grain drill-type mobile frame supports a plurality of coaxially aligned hollow cylinders, each containing a quantity of seed to be planted. Each cylinder is provided with a plurality of rows of circumferentially spaced spikes projecting radially outward of its periphery forming a soil penetrating punch having a passageway for depositing seeds in soil penetrated when the cylinders are lowered toward the surface of the earth and rotated about their longitudinal axis by forward movement of the frame. Gravity seed filled and emptied hoppers, secured to the inner periphery of each cylinder wall and communicating with the respective punch, are seed filled and emptied during each revolution of the cylinders. Adjustable gate means regulates the quantity of seed discharged from the cylinders to the respective punch during revolution of the cylinders.

3,811,390

APPARATUS FOR THE CLOSING OF THE TOE OF A CIRCULARLY KNIT STOCKING ALONG A LOOPER-LINE

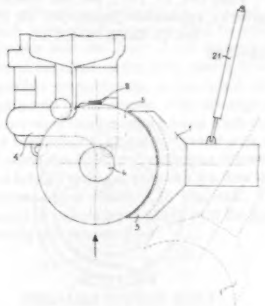
Eckhardt Hahne, Skibby, Denmark, assignor to Hans Christian Andersen, Kastanienbaum, Switzerland

Filed Mar. 17, 1972, Ser. No. 235,734

Claims priority, application Denmark, Mar. 18, 1971, 1304/71

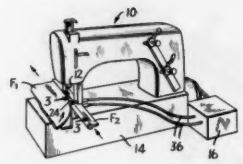
Int. Cl. D05b 7/00

U.S. Cl. 112—27 **5 Claims**



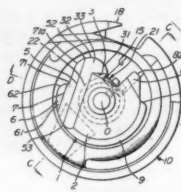
In an apparatus for the closing of the toe of a circularly knit stocking along a looper-line, a pair of jaws are provided which between them form a guiding slot into which the juxtaposed halves of the bead along the non-closed opening of the stocking may be pushed, the apparatus further comprising gripping means to grip the stocking as held between the jaws whereupon the latter are spread apart and withdrawn and the gripping means move the stocking past a working position in which trimming and stitching means are provided.

3,811,391
SEWING GUIDE APPARATUS
Arthur R. Conforti, Lynbrook, N.Y., assignor to Melco Industries Inc., Brooklyn, N.Y.
Filed June 11, 1973, Ser. No. 368,853
Int. Cl. D05b 35/06
U.S. Cl. 112—147 13 Claims



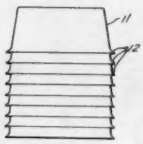
Apparatus for use in conjunction with a conventional sewing machine particularly adapted for guiding the edge of a first fabric and the closed tubular end of a second fabric to the sewing needle in a manner such that the first fabric edge is overlapped on both sides thereof by double layers of the folded tubular end of the second fabric. This is accomplished by feeding the closed tubular end of the second fabric over an elongated first guide member that is floatingly positioned therein and on or adjacent to the sewing machine in front of the presser foot and needle of the sewing machine. The first guide member comprises an enlarged tapered head portion and a pair of rearwardly extending prongs defining an elongated opening therebetween. A second guide member extends through the elongated opening between the prongs of the first guide member, and serves to fold inwardly the closed tubular end of the second fabric and to guide the edge of the first fabric so that the first fabric edge is overlapped on both sides by double layers of the closed tubular end of the second fabric prior to being advanced to the presser foot and needle of the machine.

3,811,392
DOUBLE CHAIN STITCHING METHOD AND DEVICE FOR SEWING MACHINE
Noboru Kasuga, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Oct. 17, 1972, Ser. No. 298,076
Claims priority, application Japan, Oct. 20, 1971, 46-82394
Int. Cl. D05b 1/14, 1/06
U.S. Cl. 112—168 5 Claims



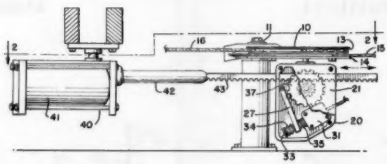
In place of the bobbin case containing a lower thread for lock stitching, a double chain stitching element of simple structure is attached to the rotary shuttle of a sewing machine for rotation therewith to provide double chain stitches with an upper thread and a lower thread which is provided in an appropriate position, instead of being provided in the rotary shuttle.

3,811,393
MANUFACTURE OF CANS AND THE LIKE
Frederick J. Close, North Madison, Ohio, assignor to The Stolle Company, Sidney, Ohio
Filed Jan. 12, 1973, Ser. No. 323,052
Int. Cl. B21d 51/26
U.S. Cl. 113—120 R 1 Claim



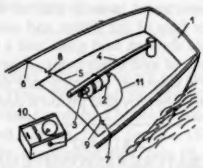
This application discloses a novel process in the manufacture of two-piece metal cans and the like wherein a predrawn cup is produced at the mill rather than by the can manufacturer. The predrawn cup is flanged and tapered. The predrawn cups are stacked in nested relation and a plurality of stacks are packaged at the mill for shipment to the can manufacturer. The can manufacturer then need only redraw and wall-iron the cups and trim, flange, wash and decorate them in order to complete the manufacture of the can. By this procedure scrap loss to the can manufacturer is avoided, making it also easier for a manufacturer to enter the can manufacturing business with less capital investment.

3,811,394
CONTROL UNIT
Paul Anthony Lathers, North Scituate, R.I., assignor to Unipas, Inc., Cranston, R.I.
Filed Mar. 23, 1972, Ser. No. 237,456
Int. Cl. B63h 25/34
U.S. Cl. 114—144 R 9 Claims



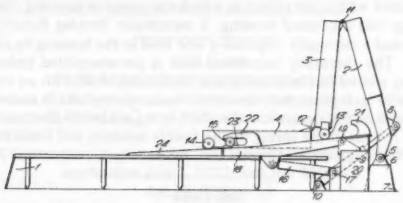
A control unit with means to provide a positive connection between a rudder and a power driving motor for automatic pilot steering. The control unit is normally attached to a steering means, such as a quandrant, which is keyed to a rudder post. The control unit has rotatable means responsive to a shaft extending from the power motor, including a sprocket which engages a detent carried by a pivotal braking arm. The arm is movable between either a release or set position. A solenoid having a plunger element is provided which extends through the distal end of the arm to effect movement of the braking arm into set position. Resilient means, such as springs, surround the plunger on either side of the brake arm and bias it either into set position when the solenoid is activated or release position when inactivated. Provision is also made for manual override of the automatic control. When the unit is in set position, the reciprocating movement of the shaft from the power motor will cause a corresponding movement of the quadrant and, ultimately, the rudder. In release position, the movement of the shaft will not affect the quadrant.

3,811,395
AUTOMATIC PILOT DEVICE
Mario Decis, 800 Rue de la Roguette, Paris 11eme, France
Filed Feb. 27, 1973, Ser. No. 336,257
Int. Cl. B63h 25/04, 25/06
U.S. Cl. 114—144 R 5 Claims



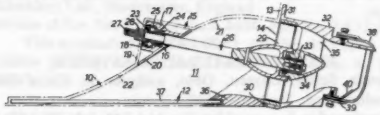
An automatic pilot device of uncomplicated construction is disclosed. The device includes an electric motor, mounted on a tiller or other component mechanically connected to a rudder, and a line having a limited degree of flexibility for coupling a pulley on the motor output shaft to at least a first fixed point on the apparatus to be steered. The automatic steering device also includes electronics for controlling the direction of rotation of the motor whereby the line may be wound on the pulley so as to cause the tiller to be pulled in the direction commensurate with correcting a steering error.

3,811,396
FOLDING COVER SYSTEM FOR HATCHES
Per Christian Wessel, Oslo, and Eldby, Per, Skarer, both of Norway, assignors to Kvaerner Brug A/S, Oslo, Norway
Filed Apr. 18, 1973, Ser. No. 352,328
Int. Cl. B63b 19/12
U.S. Cl. 114—201 R 1 Claim



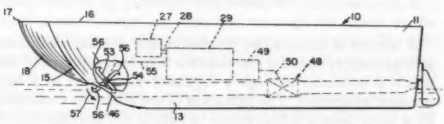
The invention relates to a hatch cover system of the type wherein cover sections are hingedly interconnected, with a first section hinged at a point which is hingedly mounted to the ship's deck so that this first section together with the adjacent second section may be pivoted into a vertical position with the lower faces of the two sections facing each other, and a third section which is hingedly connected to the second section may be pivoted to a vertical position with its top face facing the top face of the second section, all movements being effected by hydraulic means mounted between the deck and the first and levers for the third section, respectively, pivotable about a fixed pivot point by a hydraulic means and is provided near its free end with a claw adapted to receive a pin on the third cover section when the first and the second sections are approaching their vertical position, whereby the entire opening and closing operations are under positive guidance of all parts relative to each other and to the deck and the parts are positively held when in open position, all without any noise producing play, and with no part preventing the movements of the remaining parts.

3,811,397
PROPULSION DEVICES
Andrew Charles Usborne, Sheffield, England, assignor to UA Engineering Limited, Sheffield, England
Filed Nov. 15, 1971, Ser. No. 198,562
Claims priority, application Great Britain, Nov. 13, 1970, 54281/70
Int. Cl. B63h 11/02
U.S. Cl. 115—14 4 Claims



The intake duct of a propulsion device for a water-borne vessel is defined by first and second members, one of which provides the major portion of the wall of the intake duct and the other of which extends between an inlet opening and an outlet of the intake duct.

3,811,398
TWIN KEEL JET BOAT
Kermit H. Burgin, R.R. No. 1, Whitestown, Ind.
Filed Feb. 2, 1973, Ser. No. 329,061
Int. Cl. B63b 11/02; B63b 1/34
U.S. Cl. 115—16 11 Claims

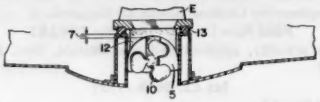


A boat having a bottom, twin longitudinal depending keels adjacent the lateral edges of the bottom and extending substantially throughout the length of said bottom, each keel being formed to provide a passageway extending longitudinally therethrough and having an intake port adjacent its bow end and an exhaust port adjacent its stern end. A pump is disposed in each passageway intermediate its ends to draw water into its intake port and force it out through its exhaust port. An engine is disposed in the boat, and a drive train, including a reversible transmission, is provided for drivingly connecting each pump to the engine. Also drivingly connected to the engine are rotary beaters which keep trash out of the intake ports. The bottom of the boat is formed with a well having closed top, sides and ends. A compressor driven by the engine is provided for delivering continuously a flow of primarily gaseous substance under pressure to the well. The well is covered by a panel or panels arranged to vent the gaseous substance downwardly and rearwardly.

3,811,399
INBOARD MOTOR BOAT
Torao Kobayashi, and Hisashi Inaga, both of Tokyo, Japan, assignors to Kioritz Corporation, Tokyo, Japan
Filed Oct. 6, 1972, Ser. No. 295,526
Int. Cl. B63b 5/16
U.S. Cl. 115—39 1 Claim

An inboard motorboat having, located in the rear half of the bottom of the boat and extending to the stern longitudinally, an upwardly recessed water passageway, an engine detachably provided on the inside of the boat at the upper wall of said water-passageway, said engine having a screw propeller cou-

pled thereto, said screw propeller protruding into said water-passageway, whereby accommodating said propeller within



the bottom contour of the hull without protruding beyond this bottom.

3,811,400

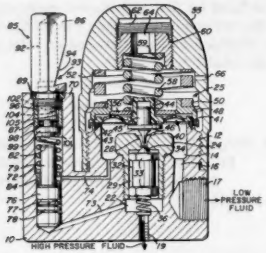
FLUID OPERATED ALARM SYSTEM

Benjamin Smilg, Dayton, Ohio, assignor to Globe Safety Products, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 164,240, July 20, 1971, abandoned. This application July 21, 1972, Ser. No. 273,688

Int. Cl. G01l *19/12*

U.S. Cl. 116—70 **15 Claims**



A whistle is actuated by a substantially constant low pressure gas supply which is also used for breathing equipment and which is obtained through a regulator connected to a high pressure gas supply. The actuation of the whistle is controlled by a valve system which opens to supply low pressure gas to the whistle when the pressure of the high pressure gas supply decreases to a predetermined level. In accordance with modifications of the invention, the whistle is also controlled in response to the demand for low pressure gas and is operated by either high or low pressure gas.

3,811,401

SEALED EVACUATED AND PRESSURIZED WATCH CASES

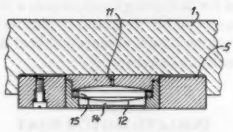
Pierre Michel Piquerez, Bassecourt, Switzerland, assignor to Ervin Piquerez S.A., Bassecourt, Switzerland

Filed Mar. 15, 1973, Ser. No. 341,758

Claims priority, application Switzerland, Mar. 29, 1972, 4643/72

Int. Cl. G01l *19/12*

U.S. Cl. 116—70 **6 Claims**



A device for indicating the maintenance of a given vacuum or over-pressure in a sealed watch case comprises a hollow piston slidably mounted in a bore of a support member, one end of said bore communicating with a primary enclosure of the case and the other end of said bore being fluidtightly sealed off from said primary enclosure by means including a watch glass. A bistable metallic membrane is disposed within said hollow interior of the piston so as to define and fluid-tightly separate two compartments, one of which contains a gas and the other of which includes an opening communicating the hollow interior with an outer face of said piston adjacent to said other end of the bore, said other compartment containing an opaque liquid, for example a brightly colored oil. The membrane is movable between two positions according to whether the pressure in the primary enclosure is above or below a limiting value, a first position in which the volume of said other compartment is such that no liquid is located between said outer face of the piston and said glass whereby said piston is visible through said glass, and a second position in which the volume of said other compartment is such that a quantity of liquid is disposed between said outer face of the piston and said glass whereby said piston is concealed.

3,811,402

TEMPERATURE RESPONSIVE GAUGE

Robert A. Keeley, P.O. Box 1529, Salt Lake City, Utah, and A. Rae McFarland, 3485 Kingshill Dr., Salt Lake City, Utah

Filed Dec. 26, 1972, Ser. No. 318,117

Int. Cl. G01k *11/06*

U.S. Cl. 116—114.5 **6 Claims**

An improved, easily produced, low-cost but reliable pop-out-type gauge adapted to be inserted in poultry, meats, etc., and to indicate when a predetermined temperature has been reached within the object in which the gauge is inserted. The gauge has a pointed housing, a membrane forming flotation cap and a thermally responsive unit held in the housing by the cap. The thermally responsive unit is pre-assembled before being placed in the housing and includes a shaft with an end pointed to rupture the membrane, and a spring held in a compressed condition around the shaft by a fusible member, such that release of the spring by the fusible member will force the shaft through the membrane.

3,811,403

INDICATOR DEVICE FOR ROTARY ELEMENTS

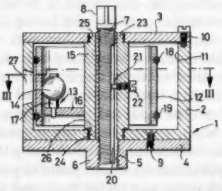
Heinrich Braukmann, 8 Drosselweg, Mosbach, Germany

Filed Sept. 11, 1972, Ser. No. 288,151

Claims priority, application Germany, Sept. 21, 1971, 2147000

Int. Cl. F16k *37/00*

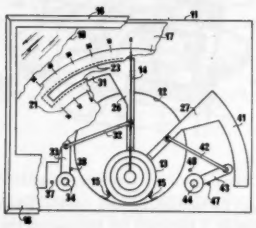
U.S. Cl. 116—125 **11 Claims**



An indicator device for a rotatable component such as a valve spindle. The device includes a housing having a cylindri-

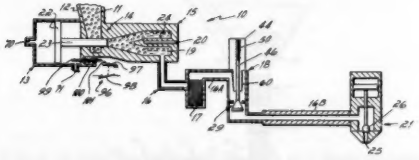
cal bore, a roller element mounted for rotatable movement relative to the housing, a pressure mechanism mounted within the roller element for pressing the element against the wall of the bore to locate the element eccentrically of the bore and an indicating device for indicating the relative position between the housing and the roller element. The pressure mechanism is non-rotatably mounted with the rotatable component and relative position between the housing and roller element is indicated by the indicating device.

3,811,404
MEASUREMENT INSTRUMENT WITH DEVICE FOR INDICATING THE LIMITS OF TOLERANCE
Mario Possati, Viale Carducci 23, 40125 Bologna, Italy
Filed June 28, 1971, Ser. No. 157,549
Claims priority, application Italy, July 10, 1970, 3484/70
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 R **2 Claims**



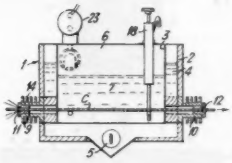
A measuring instrument including means for indicating tolerance limits, having a measurement pointer which moves over a scale provided on a panel of the instrument from a position of rest to a position indicating the value of the measurement being made, the scale of the instrument being divided into at least two fields by said tolerance-limit indicating means, at least one of said fields being within the limits of tolerance and at least one being outside said limits.

3,811,405
THERMOPLASTIC DISPENSER SYSTEM
Robert G. Baker, Avon, and Alan B. Reighard, Bay Village, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Continuation-in-part of Ser. No. 194,862, Nov. 2, 1971. This application July 7, 1972, Ser. No. 269,595
Int. Cl. B31b *1/62*
U.S. Cl. 118—2 **14 Claims**



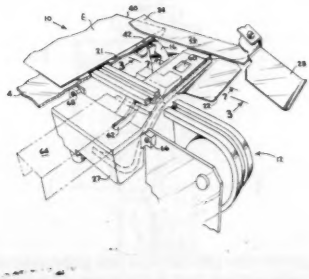
A reciprocating ram type of thermoplastic material dispensing system which includes a hopper from which solid material is fed in small batches into a pressure chamber in front of a reciprocating ram. On the forward stroke of the ram, the solid material is forced through a melting chamber and subsequently supplied in molten form to a dispensing gun. The system includes a pressure regulator in the molten material flow stream to maintain an even pressure of the material at the dispensing gun. It also includes a control circuit for cycling the ram in synchronization with insertion and removal of workpieces or products adjacent the nozzle of the gun. An interlock switch is provided in the control circuit to prevent too frequent recycling of the ram and consequent choking of the system.

3,811,406
APPARATUS FOR IMPREGNATING AND COATING STRANDED BODIES
Roy Tomlinson, Manchester, England, assignor to Connollys (Blackley) Ltd., Manchester, England
Division of Ser. No. 8,298, Feb. 3, 1970, Pat. No. 3,672,974. This application Nov. 29, 1971, Ser. No. 202,934
Claims priority, application Great Britain, Feb. 6, 1969, 6450/69
Int. Cl. B05c *3/12*
U.S. Cl. 118—6 **11 Claims**



In order to coat and fill the interstices between the elements of an elongated flexible body, for instance a multi-conductor cable core, formed by stranding or bunching a plurality of the elements together, the body is impregnated and coated with a filling material by passing it into a bath of filling material, in a liquid state, through an inlet die, through the liquid in the bath, and then out of the bath through an outlet die. The dies are wholly situated below the level of the liquid and are maintained at a temperature such that there is no substantial leakage of the liquid from the bath therethrough while the body is passing continuously through the bath. Preferably the dies are each mounted at the free end of a metal tube projecting from the wall of the bath and are maintained at the said temperature by means of external cooling fins on the tubes.

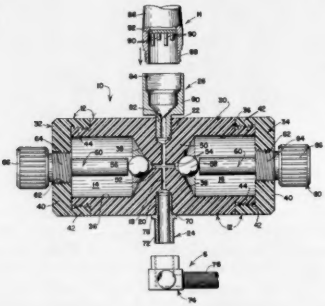
3,811,407
FLAP TURNING AND SEALING SYSTEM FOR POSTAGE METER MAILING MACHINE
Raymond R. Lupkas, Trumbull, and Dominick L. Grimaldi, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed May 12, 1972, Ser. No. 252,849
Int. Cl. B05c *1/02*
U.S. Cl. 118—32 **18 Claims**



A moistening device for a postage meter mailing machine comprising a water reservoir and a wick support arm. The wick support arm extends from an upper section of the reser-

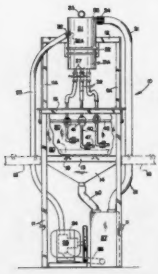
voir in a direction which is at least at a slight angle with respect to a horizontal plane, such as the deck of the mailing machine. At least a portion of the lower section of the arm and an adjacent vertical section of the arm are open so as to expose an extended edge of the wick and provide a region for contact with the gummed region of an envelope. A spring like member is provided around the wick in the exposed region so as to apply a downward pressure on the wick, thereby forcing the wick against the envelope which is simultaneously being forced upwardly by a spring like member positioned below the envelope.

3,811,408
PENUMATIC CLEANING, DISINFECTING AND OILING DEVICE FOR A TUBE-TYPE DENTAL HANDPIECE
Arnold M. Thompson, Box 172A Gay Ave., Wheaton, Ill.
Filed Nov. 6, 1972, Ser. No. 304,337
Int. Cl. B05c *7/02*
U.S. Cl. 118--73 **9 Claims**



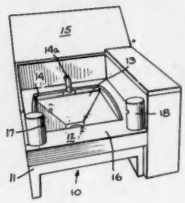
A device in the form of a small compact portable reservoir and valve arrangement designed for attachment to a source of pressurized air and by means of which measured charges of a cleansing, disinfecting and oiling liquid may be successively and forcibly projected in an atomized condition through the small bore passages of a dentist's handpiece.

3,811,409
LOW PRESSURE PAINT SPRAY APPARATUS FOR CONVEYOR CARRIED ARTICLES
John A. Porter, 3497 Hawthorne Ave., Eugene, Oreg.
Filed May 4, 1972, Ser. No. 250,414
Int. Cl. B05c *11/16, 5/00*
U.S. Cl. 118—314 **1 Claim**



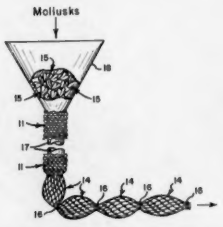
An apparatus for low pressure spraying of passing articles and having a series of adjustable spray assemblies located along the articles path. Multiple adjustments provided enable convenient setting of the spray pattern size and inclination to best treat the passing articles. A surge tank receives a directional incoming flow with each spray assembly being fed from the remote end of the surge tank. Large orifice nozzles advantageously are not susceptible to damage from fluid contaminants.

3,811,410
ANIMAL WATER-CLOSET
Dolly A. Roberts, 161 Flaming Dr., Clearwater, Fla.
Filed Aug. 24, 1972, Ser. No. 283,401
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **1 Claim**



A water-closet for household pets, such as cats and dogs, includes a receptacle, a platform for supporting the animal, and a water flushing system for the receptacle which is activated by an electromechanical control valve. Photoelectric means are provided at the entry end of the platform for sensing the presence of an animal in the water-closet. A signal is generated by the photoelectric means when the animal interrupts the light beam, which signal activates the water flushing system. A time delay circuit is provided between the photoelectric means and control valve so as to delay actuation of water flushing for a predetermined and adjustable period of time and thereby avoid flushing while the animal is in the presence of the water-closet.

3,811,411
METHOD OF CULTIVATING MOLLUSKS
Henry W. Moeller, 45 St. Andrews Rd., South Hampton, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,656
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **6 Claims**

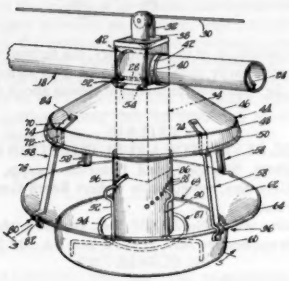


Mollusks are cultivated by enclosing discrete groups of seed mollusks lengthwise of the interior of the tube of netting material, lowering the resulting tube into an aqueous mollusk growth-inducing environment, and thereafter harvesting the grown mollusks.

3,811,412
POULTRY FEEDER

Robert A. Murto, Goshen, and Eldon Hostetler, Middlebury, both of Ind., assignors to Chore-Time Equipment, Inc., Milford, Ind.

Continuation of Ser. No. 74,381, Sept. 22, 1970, abandoned. This application Sept. 27, 1972, Ser. No. 292,614
Int. Cl. A01k 05/00
U.S. Cl. 119—53 5 Claims

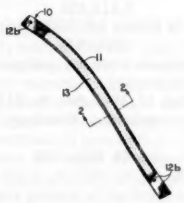


A poultry feeding apparatus is disclosed herein and includes a central feed conveyance tube for directing feed to a plurality of feed dispensing assemblies which are suspended at spaced intervals along the feed conveyance tube. Each dispensing assembly comprises a hollow feed distributing member adapted to be rotatably secured to and depend from the conveyance tube for receiving feed therefrom, a pan disposed beneath the distributing member for receiving the feed therefrom, a hood disposed around and connected to the distributing member, and a plurality of spoke elements securing the pan to the hood.

3,811,413
HORSE FLY COLLAR

Arnold H. Scherpenborg, 4721 Orange Knoll, La Canada, Calif.

Filed Oct. 10, 1972, Ser. No. 296,263
Int. Cl. A01k 27/00
U.S. Cl. 119—106 6 Claims

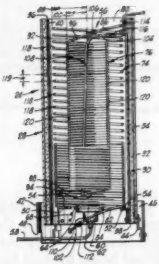


A band or strap for encircling the neck of a horse or pony carrying an elongated pocket having the upper surface perforated. Contained within the pocket is a mixture constituting a low volatility insecticide material on a granular carrier having an attractive characteristic for flies. A disagreeable taste material is also deposited on the granular material which is merely unpleasant to the taste of horses or humans who might come in contact with the collar and also controls the vaporization of this active ingredient. Also is disclosed a process for producing the insecticide combination and a novel insecticide combination.

3,811,414
HEAT EXCHANGER APPARATUS FOR PRODUCING STEAM OR THE LIKE

Richard L. Minton, Norman, Okla., assignor to Bantam Steam Company, Norman, Okla.

Filed Nov. 13, 1972, Ser. No. 306,371
Int. Cl. F22b 27/08
U.S. Cl. 122—250 R 9 Claims

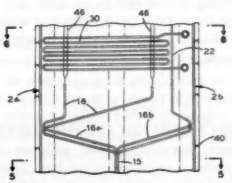


An improved heat exchanger apparatus for producing steam or the like wherein a fluid is heated via a burner assembly as the fluid passes through a coil assembly to an outlet steam nozzle, the coil assembly including an outer helically wound coil and an inner helically wound coil generally disposed within the outer helically wound coil and having one end thereof disposed generally near the burner assembly. The coil layers of the outer coil are separated so that the fluid passing therethrough is maintained at a relatively low temperature level with respect to the fluid passing from the inner coil to facilitate the insulation of the coil assembly and to enhance the heat transfer efficiency of the heat exchanger apparatus.

3,811,415
VAPOUR HEATING AND VAPOUR GENERATING UNITS

Arthur Charles Lawrence, 31 Quinton Ave., London, S.W. 20, and Milovan Grgich, 10 Woodstock Ave., London, N.W. 11, both of England

Filed Feb. 1, 1972, Ser. No. 222,471
Int. Cl. F22g 7/14
U.S. Cl. 122—478 8 Claims

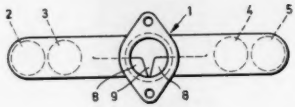


A vapor generating and superheating unit having its components arranged to support it in both horizontal and vertical position and including a plurality of headers disposed adjacent one of the sidewalls, said sidewall being lowermost when the unit is in horizontal position.

3,811,416
INDUCTION PIPE FOR INTERNAL COMBUSTION ENGINES

Reinhard Gospodar; Kurt Reichel, both of Wolfsburg; Gustav Vogelsang, Braunschweig, and Peter Thauer, Neuhaus, all of Germany, assignors to Volkswagen Werk AG, Wolfsburg, Germany

Filed Dec. 8, 1970, Ser. No. 96,037
Claims priority, application Germany, Dec. 11, 1969, 1962113
Int. Cl. F02b *75/20*
U.S. Cl. 123—52 M **6 Claims**

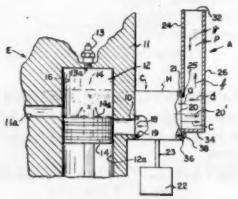


An induction pipe for internal combustion engines having a distributor section and supply lines for the mixture with the deflector having means therein to even the distribution of the mixture and the deflector being formed by a wall between the branch off points and also provided with recesses.

3,811,417
FUEL SPRAYBACK INHIBITOR FOR TWO CYCLE ENGINES

Daniel J. Keenan, Merrill, and Norman F. Welzein, Saginaw, both of Mich, assignors to Samuel C. Adams, Reese, Mich., by said Welzein

Filed Sept. 23, 1970, Ser. No. 74,543
Int. Cl. F02b *33/04, 33/12;* **F02m** *17/00*
U.S. Cl. 123—73 A **12 Claims**



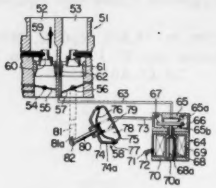
A fuel sprayback inhibitor for use with the carburetor of a two cycle internal combustion engine comprising an air intake duct having walls defining a longitudinally extending air passage terminating at one end in an inlet and terminating at the other end in an outlet communicating with the intake of the carburetor, the air passage extending vertically and normal to the carburetor intake.

3,811,418
VEHICLE SPEED LIMITING DEVICE

Naoji Sakakibara, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed May 3, 1971, Ser. No. 139,461
Int. Cl. F02d *11/08;* **F02m** *13/04;* **F02d** *9/00*
U.S. Cl. 123—103 R **8 Claims**

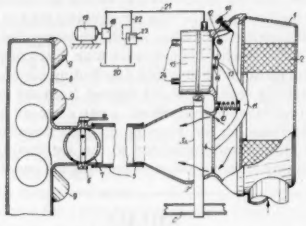
A speed-responsive switch coupled to a moving part of a vehicle is closed when the vehicle speed exceeds a predetermined limit to pass a current through an activating circuit including the coil of a solenoid thereby to activate the solenoid, which thereby operates to close a high-speed valve in the high-speed venturi (throat or barrel) of the carburetor of the vehicle engine and thereby to reduce the vehicle speed. When absolutely necessary, as in an emergency, the activating circuit is rendered temporarily inoperative by another switch, thereby permitting the vehicle to be driven at speeds above the limit.



3,811,419
CONTROL DEVICE FOR A FUEL INJECTION SYSTEM

Konrad Eckert, Stuttgart, and Heinrich Knapp, Leonberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 80,685, Oct. 14, 1970, abandoned.
This application Nov. 2, 1972, Ser. No. 303,206
Int. Cl. F02m *7/00*
U.S. Cl. 123—119 R **7 Claims**

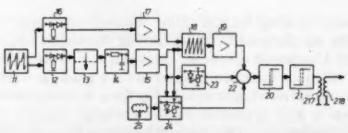


In an internal combustion engine having a throttle in the suction duct a disc is mounted in the duct airstream on the end of a pivotable arm for controlling the fuel valve in proportion to the rate of air intake. A section of the duct between the throttle and the disc is formed by an elastic hose. The disc is mounted in an enlarged section housing the air filter and is of appreciably larger diameter than the throttle.

3,811,420
IGNITION SYSTEM FROM AN INTERNAL COMBUSTION ENGINE

Wilhelm Vogel, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 14, 1972, Ser. No. 217,779
Claims priority, application Germany, Jan. 21, 1971, 2102688
Int. Cl. F02p *5/02*
U.S. Cl. 123—148 E **11 Claims**



An ignition system regulates the ignition timing of a combustion engine by first generating a series of pulses in

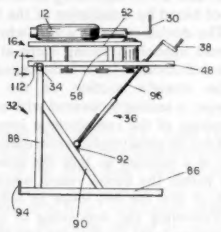
synchronism with the position of the rotating crankshaft which are utilized to trigger a monostable multivibrator to generate a series of uniform pulses. The average value of these uniform pulses is obtained by passing these through low pass filters and utilized to drive a constant DC current source which charges a storage capacitor to form part of a saw-tooth generator. The resulting slopes of the leading edges thus formed are a function of the crankshaft rotation speed. An independent set of impulses, also synchronously timed with the position of rotation of the crankshaft, is used to discharge the storage capacitor. The saw-tooth wave-form is applied to a Schmidt-trigger which is adjusted to sense a predetermined level of the leading edges. When the leading edge reaches this threshold value, the Schmidt-trigger activates an amplifier which transmits a control signal to the ignition coil of the combustion engine to ignite the combustible mixture in the cylinders. By regulating the level of the saw-tooth wave-form as a function of the rotational speed of the crankshaft and the intake manifold pressure, the ignition timing can be regulated in response to changes in these parameters.

3,811,421

BASEBALL PROJECTING MACHINE

John R. Betten, 4285 Burton, S.E., Grand Rapids, Mich.

Filed Mar. 27, 1972, Ser. No. 238,310
Int. Cl. F41b 3/04
U.S. Cl. 124—1 **7 Claims**



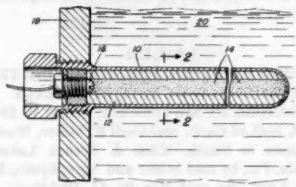
A baseball training machine having a frame and a ball propelling assembly mounted on the frame for projecting balls therefrom. The frame is pivotably mounted at a front portion on a supporting base member. An adjustable brace releasably couples the rear portion of the base to the frame. The brace includes a threaded rod which, when rotated, changes the effective length of the brace to raise or lower the rear portion of the frame to adjust the angle of projection of the balls. Further, the base has a plurality of spaced retaining devices for receiving a lower portion of the brace in various adjusted positions so that the rear portion of the frame can be adjusted through a wide angle with respect to the base for projecting ground balls batting practise, fly balls, and pop flies. The propelling assembly includes a pair of wheels, each of which is independently driven by a constant speed motor through a variable drive mechanism including an idler pulley and a drive belt. The idler pulley is supported on the frame and adjusted by an adjusting rod to vary the tension of the belt and the speed of the wheel. A variable diameter pulley is also employed on the motor drive shaft or on the propelling wheel to change the speed of the belt as the tension of the belt is changed.

3,811,422

CHEMICAL HEATER TUBE

Donald R. Olson, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1972, Ser. No. 296,361
Int. Cl. F24j 1/04
U.S. Cl. 126—263 **8 Claims**



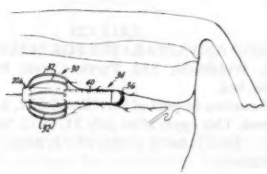
A chemical heater-cartridge for producing high amounts of heat without excessive pressure rises. A sealed, thin-walled, steel tube filled with solid lithium surrounding a core of Teflon powder forms the portable heater-cartridge. The exothermic reaction of this mixture, initiated by a pyrotechnic fuze, results in a high heat output and a reduction of pressure within the cartridge. This reduction of pressure permits the use of a small-mass tube which increases the rate of heat transfer. Sulfur hexafluoride vapor (SF_6) or Freon may be added under pressure to enhance the reaction rate. Alkali metals, other than lithium, and fluorocarbons, other than Teflon, may be used and are equivalent reactants.

3,811,423

DEVICE FOR INSERTION INTO THE REPRODUCTIVE TRACT AND METHOD OF USING SAME

Ben Wade Oakes Dickinson, III, San Francisco, and Robert Wayne Dickinson, San Rafael, both of Calif., assignors to Agrophysics, Inc., San Francisco, Calif.

Filed Jan. 22, 1971, Ser. No. 108,889
Int. Cl. A61b 19/00
U.S. Cl. 128—1 R **17 Claims**



A device for detection of fluid precursive to ovulation such as estrus in animals of the type having a tubular reproductive tract including an ovary (e.g., a cow). The device includes a mechanically operated sensing assembly including a water-soluble sensing element and formed to release in response to contact and dissolution of the element by ovulation precursive fluids to perform a function such as providing visual indication external of the animal by projection of a solid sighting member or by release of a dye.

A time delay assembly (e.g., a blocking plug or timed closing of a sensing element bypass valve) is provided to prevent reproductive tract fluids from contacting the sensing element until a predetermined time after insertion of the device to avoid triggering by a preliminary fluid flow.

The device is prevented from spontaneous expulsion from the animal by an anchor assembly adapted to engage and

anchor the device into the reproductive tract wall. This anchor assembly serves also to stimulate the tract wall by altering the normal cross-sectional configuration. An effective anchor assembly includes a plurality of resilient spring-like strands each in a hoop configuration around a housing mounted into rings movable with respect to each other to collapse the hoops and project the anchor into a sensitive area for expulsion from the animal by peristaltic movement. The rings may be retained in a proximate position by an element which disintegrates after a predetermined time or in response to ovulation precursive flow.

3,811,424

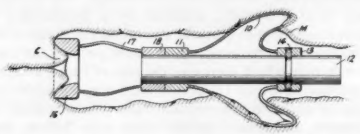
ARTIFICIAL METHOD FOR MODIFYING THE REPRODUCTIVE CYCLE IN ANIMALS

Ben W. O. Dickinson, III, San Francisco; Robert W. Dickinson, San Rafael, both of Calif., and Cecil R. Miller, Westchester, Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa., by said Miller and Agrophysics, Inc., San Francisco, Calif., by said Ben W. O. Dickinson, III and Robert W. Dickinson

Filed Jan. 22, 1971, Ser. No. 108,922

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **7 Claims**



A method for changing and resetting the starting time of the estrus or reproductive cycle in female animals (e.g. a cow) including the steps of inserting a mechanical device therein, engaging the device with the reproductive tract wall to prevent expulsion by the animal straining and exerting pressure sufficient to alter the cross-sectional configuration of the tract wall for a substantial period of time. This pressure causes alteration or stimulation of the reproductive or estrus cycle regulatory mechanism of the animal to reset the beginning of the reproductive cycle, and under certain conditions, to cause a shortening of the cycle. A typical device includes a number of radially projecting resilient hoops.

3,811,425

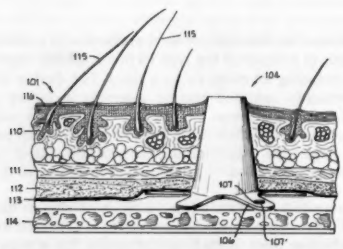
METHOD AND APPARATUS FOR MOUNTING HAIR

Garth E. Widdifield, 532 Turtle Creek, North Dr., Indianapolis, Ind.

Continuation-in-part of Ser. No. 60,382, Aug. 3, 1970, abandoned. This application July 31, 1972, Ser. No. 276,328

Int. Cl. A61b *17/00, 17/18;* **A61d** *1/00*

U.S. Cl. 128—1 **3 Claims**



A method and apparatus for mounting hair to a human head. In one embodiment, holes are formed in the scalp and U-shaped anchors are surgically embedded into the scalp with the ends of each anchor protruding out of the scalp. A mesh screen having hair mounted thereto is then attached to the anchors. In another embodiment, an incision is made through the skin and subcutaneous tissues of the scalp down to and through the periosteum. The periosteum is then separated from the skull and the base of an implant is positioned between the periosteum and skull. The body of the implant tapers from the base to the top — which protrudes from the scalp to which connection with a hair piece may be made.

3,811,426

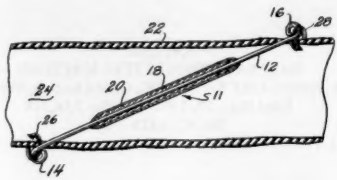
METHOD AND APPARATUS FOR THE IN-VESSEL RADIATION TREATMENT OF BLOOD

Gordon G. Culver, Klamath Falls, Oreg., and William F. Riemath, Pasco, Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 21, 1973, Ser. No. 362,613

Int. Cl. A61n *5/10*

U.S. Cl. 128—1.2 **7 Claims**



An apparatus and a corresponding method for the in-vivo radio-therapy of blood by irradiation of the blood within the blood vessel. The device includes a wire which has a straight section and small oppositely facing loops at each of its two ends. An active radioisotope-layer is deposited over the center portion of the straight section of the wire and this radioisotope-layer is sealingly covered with a coating-layer to prevent any leaking of the radioisotope into the blood. The wire is adapted for surgical implantation diagonally transverse a blood vessel in a manner so that the active radioisotope-layer lies fully within the blood vessel, while the end of the wire projects such that the two loops lie fully exterior to the blood vessel. Following the depositing of the radioisotope-layer and the coating-layer on the wire and sterilization of the wire, the device is surgically implanted diagonally transverse the blood vessel and is anchored in place with respect to the blood vessel by suturing through the loops.

3,811,427

PRESSURE RECEIVER

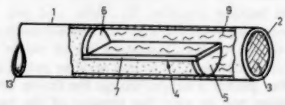
Heinz Kresse, Erlangen, Germany, assignor to Siemens A.G., Erlangen, Germany

Filed Sept. 7, 1972, Ser. No. 287,125

Claims priority, application Germany, Sept. 9, 1971, 2145198

Int. Cl. A61b *5/02;* **G01l** *9/02*

U.S. Cl. 128—2.05 D **4 Claims**



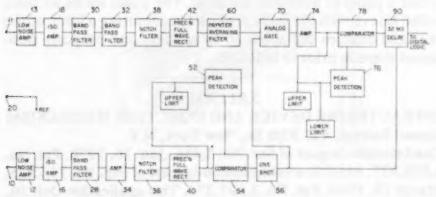
A pressure receiver for intracorporal pressure measurements, for example, intracardial or intravasal blood pressure

measurements, includes a substantially elongated hollow body, preferably a tube, the interior of which is divided by an at least partly elastic separating wall into a first section which is subjected to presssure which is to be measured and a second section having the comparing pressure, whereby changes in the shape of the elastic wall portion are used for measuring the pressure. The invention is particularly characterized in that the separating wall within the hollow body extends between two opposed locations which however, are shifted in the longitudinal direction of the hollow body. According to another construction the separating wall extends tongue-like into the hollow body and consists of two interconnected strips. The hollow space between the two strips being connected with the second section.

3,811,428
BIOLOGICAL SIGNALS MONITOR

Joseph M. VanHorn, Cambridge; Paul Epstein, Brookline, and Patrick G. Phillipps, Framingham, all of Mass., assignors to Brattle Instrument Corporation, Cambridge, Mass.

Filed Dec. 30, 1971, Ser. No. 214,287
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F **46 Claims**



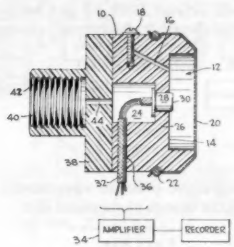
Biological signals (especially, e.g., fetal QRS complexes) are monitored with signal processing circuitry featuring, in various aspects, in the fetal heart rate monitor, automatic thresholding of maternal and fetal signals; a digital phase lock loop for generating fetal heart rate signals related to the loop frequency, the loop including means for estimating the rate during occurrences of blank spaces caused by removal of signals representing merged maternal and fetal heart beats; counter controlled means for disabling readout; low impedance preamplification of signals received from the body; and a low Q filter with significant useful output energy in the 50–100Hz range, 60Hz noise being removed by a notch filter.

3,811,429
ARTERIAL PULSE WAVE PRESSURE TRANSDUCER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Chung Kim, Detroit, Mich.; Donald Gorelick, and Wayne Chen, both of Silver Spring, Md.

Filed Sept. 25, 1972, Ser. No. 291,845
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 E **7 Claims**

A novel arterial pulse wave pressure transducer is disclosed, the transducer comprising a fluid-filled cavity having a flexible membrane member disposed over the cavity and adapted to be placed on the skin over an artery. An arterial pulse wave creates pressure pulses in the fluid which are transduced by a pressure-sensitive transistor disposed in direct contact with the fluid into an electric signal. The electrical signal is

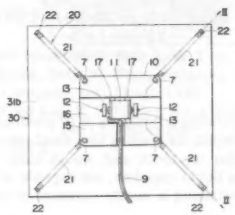


representative of the pulse waves and can be recorded so as to monitor changes in the elasticity of the arterial walls, and the like.

3,811,430
MASSAGING DEVICE

Shinya Kawakami, 1-4, Hirano Shinohachi 2-chome, Higashi, Sumigoshi-ku, Osaka-shi, Japan

Filed Sept. 25, 1972, Ser. No. 292,097
Claims priority, application Japan, May 25, 1972, 47-61173
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **25 Claims**



A compact, portable massaging device for providing, by vibrating, gentle massage for remedial or hygienic purpose, which is fabricated in the form of a cushion and which comprises a motor, a pair of eccentrically rotatable vibrator elements for producing vibrations through a housing structure, and a plurality of coil springs for amplifying the vibration. These motor, vibrator elements and housing structure are covered with sponge material to enable the device to be used as a cushion.

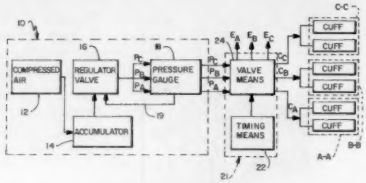
3,811,431
PROGRAMMED VENOUS ASSIST PUMP

Maurice Apstein, 4611 Maple Ave., Bethesda, Md.

Filed Jan. 17, 1973, Ser. No. 324,266
Int. Cl. A61h *7/00*
U.S. Cl. 128—64 **5 Claims**

An apparatus for providing circulatory assistance to a bed patient to preclude the pooling or clotting of venous blood in the legs or other extremities. A plurality of pairs of pressure cuffs are disposed along the legs of a patient needing circula-

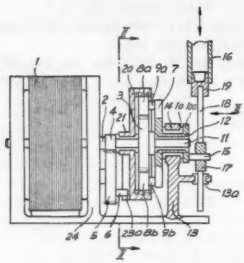
tory assistance. Programming means are provided to facilitate the sequential inflation of said pressure cuffs, in such a manner that a progressive pressure wave travels up the patient's legs pushing the venous blood ahead of it.



3,811,432
DEVICE FOR OPERATING A PUMP SO AS TO PRODUCE THEREFROM A PULSATING JET OF LIQUID

Michel A. Moret, 39, Peillonnex, /1225 Chene Bourg, Switzerland

Continuation-in-part of Ser. No. 100,755, Dec. 22, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,742
Claims priority, application Switzerland, Dec. 24, 1969, 19302/69
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **15 Claims**

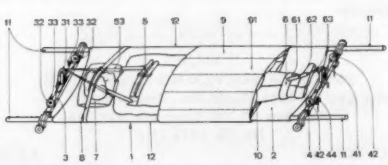


Device for operating a pump so as to produce therefrom a pulsating jet of liquid for feeding to a hand-piece for medical care, in particular for tooth and mouth care, in which the frequency of the liquid impulses, are capable of being modulated while maintaining a nearly constant amplitude of the liquid pressure.

3,811,433
TRACTION APPARATUS FOR A STRETCHER

Jacques Brachet, 34 Rue de Charenton, Paris, France

Filed Feb. 28, 1972, Ser. No. 229,734
Claims priority, application France, Mar. 10, 1971, 71.08341
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 C **4 Claims**

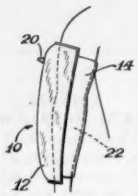


Traction apparatus for a prone patient on a stretcher includes a chest belt and a harness secured thereto, and a belt for the feet and a harness secured thereto. Pulley means are supported on the stretcher frame whereby cords on the harnesses may be tensioned to apply traction to the patient.

3,811,434
INFLATABLE SPLINT

Harold D. Jacobson, Chicago, and Arthur F. Jacobson, Highland Park, both of Ill., assignors to S. I. Jacobson Mfg. Co., Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,174
Int. Cl. A61f *5/04*
U.S. Cl. 128—89 R **7 Claims**

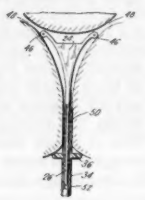


An inflatable splint, and method of making same, comprising a flexible, inflatable body portion to one side of which is joined a panel of a flexible material. The panel forms an open ended sleeve with the body portion for admitting a limb, or the like, and enables the splint to be quickly and properly positioned thereon prior to inflation.

3,811,435
INTRAUTERINE DEVICE AND INJECTION MECHANISM

Samuel Soichet, 4 E. 95th St., New York, N.Y.

Continuation-in-part of Ser. No. 5,466, Jan. 26, 1970, Pat. No. 3,678,927, which is a continuation-in-part of Ser. No. 713,825, March 18, 1969, Pat. No. 3,507,274. This application Oct. 20, 1971, Ser. No. 190,769The portion of the term of this patent subsequent to Apr. 21, 1987, has been disclaimed.
Int. Cl. A61f *5/46*
U.S. Cl. 128—130 **11 Claims**



An improved intrauterine device that may be injected into the uterine cavity without puncturing the uterus and without subsequent expulsion therefrom. The improved injector mechanism used to introduce the device into the uterus is applied only in the cervical canal, towards but not beyond the internal os. Regardless of the conformation of the uterus the device automatically expands in the endometrial cavity.

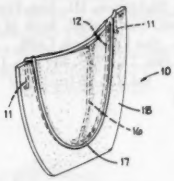
3,811,436
STOMA FILTER GUARD

Robert G. Ferrell, 1055 E. 52nd St., Indianapolis, Ind.

Filed May 31, 1972, Ser. No. 258,454
Int. Cl. A61f *13/00, 15/00;* **A61m** *15/00*
U.S. Cl. 128—140 **2 Claims**

Disclosed is a filter and guard assembly for a trachea neck stoma as used, for example, by a laryngectomee. The assembly

comprises a frame and a foamed polyester urethane filter element or pad carried by the frame which is formed so as to

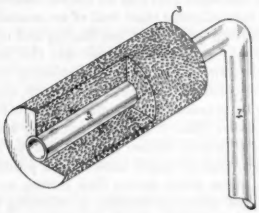


position the filter outwardly of the stoma, the frame lying against the neck area of the user which is adjacent the stoma.

3,811,437
EARPLUGS

Ross Gardner, Jr., Stoughton, Mass., assignor to Cabot Corporation, Cambridge, Mass.

Filed Oct. 26, 1971, Ser. No. 192,366
Int. Cl. A61f *11/02*
U.S. Cl. 128—152 **10 Claims**

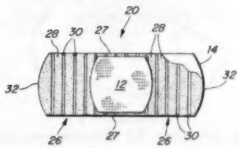


There are disclosed earplugs composed of certain polymeric foam materials. The earplugs are of generally cylindrical shape and of somewhat larger diameter than the human ear canal. The earplugs are composed of a foamed plasticised polymeric material having a sufficiently high concentration of plasticizer to provide the earplug with a reduced rate of recovery from compression.

3,811,438
ADHESIVE TAPES AND BANDAGES

George J. Economou, 8 Elm St., Norton, Mass.

Continuation-in-part of Ser. No. 239,688, March 30, 1972, abandoned. This application July 24, 1972, Ser. No. 274,449
Int. Cl. A61l *15/00*
U.S. Cl. 128—156 **13 Claims**

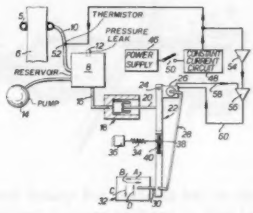


Adhesive tapes and bandages comprising a flexible backing with an adhesive portion distributed and adhered thereon in the form of adhesive layers alternately spaced with regions of lesser adhesiveness therebetween, each region of lesser adhesiveness generally of a width less than each adjacent layer of adhesive, with each region having a minimum width of about 0.02 inches.

3,811,439
APPARATUS FOR CLINICAL MEASUREMENT OF BLOOD PRESSURE IN A CARDIO-VASCULAR SYSTEM

Henry E. Brown, Slough, England, assignor to Wilkinson Sword Limited, London, England

Filed Aug. 28, 1972, Ser. No. 284,432
Claims priority, application Great Britain, Sept. 8, 1971, 41812/71
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M **14 Claims**

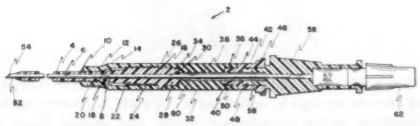


Blood pressure measuring apparatus comprises a cuff arrangement for encircling the patient's limb, and a pump for pressurising the cuff above the systolic pressure. A pivotally mounted lever carries a pen moving over a chart, and the cuff pressure is allowed to leak away and is caused to pivot the lever so that the pen draws a line on the chart. The lever also carries a motor drivingly connected to oscillate the pen, transverse to this line, in response to pressure fluctuations in the cuff caused by the patient's blood flow pulsations. The motor is mounted either at the pivot axis of the lever or on the opposite side thereof to the pen. The lever may be driven, in response to the cuff pressure, by a bellows arrangement, or alternatively it may be servo-driven in response to this pressure.

3,811,440
CATHETER PLACEMENT UNIT WITH PRESSURE CLOSURE

Harvey Robert Moorehead, Salt Lake City, and George R. Reading, Sandy, both of Utah, assignors to Desert Pharmaceutical Company, Inc., Sandy, Utah

Filed Aug. 9, 1971, Ser. No. 170,157
Int. Cl. A61m *5/32*
U.S. Cl. 128—214.4 **2 Claims**



A catheter placement unit comprising an adapter assembly for coupling a catheter tube to a fluid infusion unit and including resilient means which are manually compressable to control the flow of fluid through the catheter tube. Two forms of the catheter placement unit are disclosed.

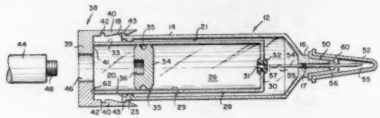
3,811,441
CARTRIDGE SYRINGE

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology Inc., Bethesda, Md.

Filed Feb. 10, 1972, Ser. No. 225,200
Int. Cl. A61m *5/24*
U.S. Cl. 128—218 DA **1 Claim**

A syringe adapted to inject substantial amounts of medicament, the syringe comprising a cylindrical holder having a

tapered neck at one end with a central through-bore while the other end is open and provided with a peripheral flange. A cannula assembly is affixed to the tapered neck of the holder and the cannula needle extending through the bore in the holder so that one end of the needle is outside and the other within the holder. The needle has a through-bore with its outer end open and its inner end closed, the needle portion within the holder being provided with a side aperture for communication with the outside. An ampoule is slidably positioned in



the holder with its end adjacent and spaced from the needle being provided with an aperture having a pierceable seal and its other end provided with a piston with the medication located therebetween. A latch cap having depending step-wise latches fits over the piston end of the ampoule to retain it within the holder by having the latches engage the holder flange. The latch cap has a central aperture to allow passage therethrough of a plunger threadedly secured to the piston for use in aspirating and injecting the medication.

3,811,442

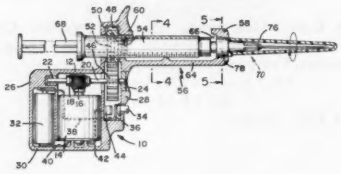
HYPODERMIC SYRINGE HOLDER AND APPLICATOR

Arthur M. Maroth, Grumman Hill Rd., Wilton, Conn.

Filed Mar. 23, 1972, Ser. No. 237,440

Int. Cl. A61m *5/18;* **A61b** *17/32*

U.S. Cl. 128—218 R **6 Claims**



A holder-applicator device for a needle-carrying hypodermic syringe by which there is greatly facilitated the introduction of the hypodermic needle into animal tissue or flesh. The device has a motor for rotatably mounting the syringe body in such a way that the needle thereof projects at a forward location and can be conveniently applied to the desired area. The motor includes a battery supply for the same, by which a turning, driving force is supplied to the syringe and needle to effect a rapid turning of the same about their common axis. Such turning of the needle enables it to penetrate into animal tissue or flesh much more effectively than heretofore and with a minimum of axial force being required, thereby greatly reducing discomfort or pain. Upon penetration of the needle being effected, the motor is made inoperative. Thereafter the injection is effected by the usual operation of depressing the plunger of the syringe. Further, the hypodermic needle differs from existing needles in that it has a sharp, conical solid point, and in that the discharge openings of the needle are in the side walls thereof disposed immediately behind the solid conical point.

3,811,443

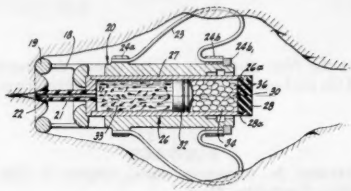
METHOD AND APPARATUS FOR ARTIFICIAL INSEMINATION

Ben Wade Oakes Dickinson, III, San Francisco, and Robert Wayne Dickinson, San Rafael, both of Calif., assignors to Agrophysic, Inc., San Francisco, Calif.

Filed Jan. 22, 1971, Ser. No. 108,891

Int. Cl. A61m *37/00*

U.S. Cl. 128—235 **19 Claims**



A semen container carrying an anchor assembly adapted to engage the reproductive tract wall of an animal to prevent expulson therefrom after insertion therein and including means to urge semen from the container into the tract toward the ovary a predetermined time after insertion of the container. In order to properly time the release of semen, the semen urging means may be actuated in response to means for sensing ovulation precursive fluid secretions including a soluble sensing element. Also, semen release may be delayed independent of any sensing means to begin until after a predetermined time selected to allow some semen flow during ovulation. In the latter case, the semen is capable of releasing semen over an extended period of time. Multiple semen containers adapted to release semen in sequence increase the duration of semen release.

3,811,444

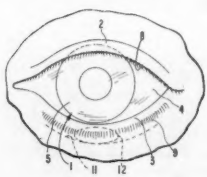
BIOERODIBLE OCULAR DEVICE

Jorge Heller, Palo Alto, and Richard W. Baker, Mountain View, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Dec. 27, 1972, Ser. No. 318,891

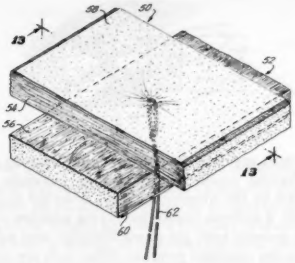
Int. Cl. A61m *31/00*

U.S. Cl. 128—260 **11 Claims**



An ocular insert for the continuous controlled administration of a predetermined therapeutically effective dosage of drug to the eye over a prolonged period of time. The insert comprises a drug formulation dispersed through a body of selected hydrophobic polycarboxylic acids which erode in the environment of the eye over a prolonged period of time to dispense the desired amount of drug.

3,811,445
ABSORBENT MATERIAL AND METHODS OF MAKING THE SAME
Zdenek Denny Dostal, Ramsey, N.J., assignor to International Playtex Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 5,080, Jan. 22, 1970, Pat. No. 3,695,270. This application Sept. 29, 1972, Ser. No. 293,631
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 18 Claims

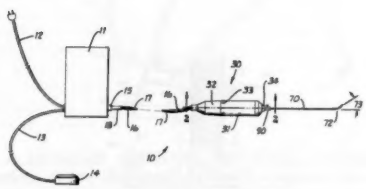


A disposable material and method of constructing such material is disclosed. The absorbent material includes at least two united constituents, one of which contains filaments with a portion of such filaments transferred through openings in the other constituent.

The transference may be effected through the use of transfer needles, which not only transfers filaments but additionally provides the openings through which the filaments extend.

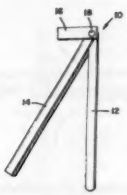
The absorbent material is particularly adapted for use in a tampon or other catamenial device. Other uses, such as in disposable diapers or in other products where a relatively high degree of absorbency in a relatively economical product is desirable are alsocontemplated.

3,811,446
ENDARTERECTOMY APPARATUS
Everett R. Lerwick, 35 North Ave., St. Louis, Mo., and William A. Cook, 925 South Curry Pike, Bloomington, Ind.
Filed Nov. 9, 1970, Ser. No. 87,902
Int. Cl. A61b *17/00*
U.S. Cl. 128—303 3 Claims



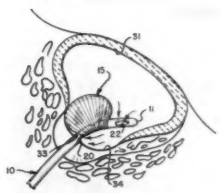
An apparatus and method for removing arteriosclerotic material from an artery. An electric motor is connected by flexible springs or torque shaft to a rotation oscillation converter. A rod having a bendable looped tip or loop at its distal end is removably connected to the oscillatory output of the converter. The loop or tip is inserted into the artery which has been cut to receive the tip. The tip is oscillated between the media layer and advantitia layer stretching the adventitia layer and causing separation of the two layers. The loosened arteriosclerotic core is then removed intact from the artery which is then surgically closed.

3,811,447
ORAL HYGIENE APPLIANCE
Alice Weber, 604 Ellis St., San Francisco, Calif.
Filed May 29, 1973, Ser. No. 364,600
Int. Cl. A61b *17/24*; A61c *15/00*
U.S. Cl. 128—304 4 Claims



An oral hygiene appliance for removing plaque from interior surfaces of the mouth not adequately cleaned by conventional tooth-brushing. The device comprises two V-shaped jackets pivotally joined at one end by a pin. A flat elongate tongue scraper blade is held by the pin at one end within a first jacket. The blade is angularly moveable between a storage position within the jacket and a use position exterior to the jacket. A flat spool swivels into and out of the other jacket in a similar manner.

3,811,448
URINARY DRAINAGE CATHETER
Albert W. Morton, 2241 Webster Ave., Apt. 1-N, Bronx, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,761
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 B 2 Claims

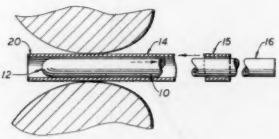


The catheter comprises a normally straight tube of resilient material adapted to be inserted into an opening of the bladder or other organ being drained of fluid. The tube has a main drainage passageway that communicates with at least one drainage opening formed in the wall of the tube, and an auxiliary inflator fluid passageway that communicates with the interior of a normally deflated inflatable balloon mounted on the exterior of the tube adjacent the forward end thereof. The balloon is disposed on one side only of the tube so that when the balloon is inflated the opposite side of the tube is unobstructed by the balloon and the normally straight tube is bowed in the vicinity of the balloon with the ends of the tube pointing away from the balloon. One of the drain openings formed in the tube wall is disposed on the side of the tube opposite the balloon in straddling relation to the level of the rearward or lower boundary of the balloon.

3,811,449
DILATING APPARATUS AND METHOD

Leland C. Gravlee, Mountain Brook, Ala., and Hulbert V. Barringer, Hohokus, N.J., assignors to Becton Dickinson and Company, East Rutherford, N.J.

Filed Mar. 8, 1972, Ser. No. 232,748
Int. Cl. A61m 29/00
U.S. Cl. 128—343 1 Claim

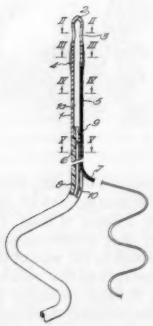


To accurately dilate tissue preparatory to introducing medical instruments therein, an elongated, flexible probe of uniform diameter having a rounded insertion tip is employed to sound the tissue. An elongated, hollow, flexible dilator is then slidably passed over the probe to coaxially abut the probe insertion tip. The probe is withdrawn through the dilator. A second, hollow, flexible dilator is coaxially inserted over the first dilator and the first dilator is withdrawn from the second dilator. Thereafter the procedure is repeated with dilators of successively larger internal diameter such that a final dilator is implanted which stretches the tissue to a desired degree. A medical instrument may thereafter be passed through the final dilator in proper alignment for treating purposes. The final dilator is thereafter withdrawn leaving the medical instrument to be utilized as needed. The apparatus provides for accurate insertion of subsequent dilators and the desired medical instrument with reduced patient trauma.

3,811,450
CATHETERS

Peter Herent Lord, Mayfield, 38 Burke's Rd., Beaconsfield, Buckinghamshire, England

Filed Oct. 25, 1972, Ser. No. 300,815
Claims priority, application Great Britain, Oct. 25, 1971, 49473/71
Int. Cl. A61m 25/00
U.S. Cl. 128—349 R 10 Claims

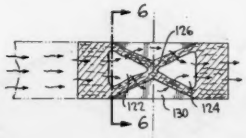


A catheter for removing urine from the bladder comprising a polymeric tube having a drainage lumen, the tube being dimensioned so that the lumen, in use, extends from the bladder only part way along the urethra, thereby leaving a substantial remaining part of the urethra at least substantially free for the normal passage of urine.

3,811,451
TOBACCO SMOKE FILTER

Richard M. Berger, Richmond, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Sept. 11, 1972, Ser. No. 287,803
Int. Cl. A24d 1/04
U.S. Cl. 131—10 R 3 Claims

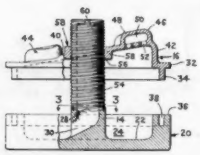


A method and apparatus for making tobacco smoke filter means having totally enclosed inner cavities surrounded completely by the filtering material. Selected cavities may be filled with a sorbent smoke-modifying additive or the like in order to provide both gas phase filtration and solid phase filtration to the resultant product. Filter rods are manufactured by utilizing a reciprocating mandrel which is timed to the movement of a filtering material, such as a continuous cellulose acetate filamentary tow, through processing stations, particularly a steam-treating bonding station, with an annular wall of smoke-permeable bonded fibrous members of the filtering material being formed when the mandrel is in its forward-most position extending at least to the point where the bonding agent contacts the filtering material. At the rearward-most portion of the stroke of the mandrel the filtering material is permitted to extended transversely completely across the bonding zone before being contacted with the steam so as to form a smoke-permeable plug of filtering material before and after the annular wall portions, thereby defining the internal cavities. Selected cavities may be partially or completely filled with an additive passing through the mandrel which can be hollow, as the mandrel is withdrawn during its rearward stroke.

3,811,452
CONVERTIBLE ASH TRAY-BANK

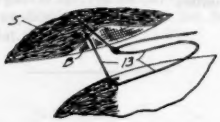
James E. Wells, 193 Woodworth Ave., Yonkers, N.Y.

Continuation-in-part of Ser. No. 87,849, Nov. 9, 1970, abandoned. This application Oct. 15, 1971, Ser. No. 189,581
Int. Cl. A24f 19/10
U.S. Cl. 131—170 A 12 Claims



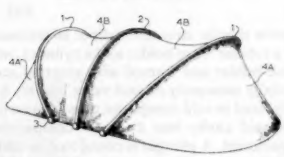
An ash tray having a base and a cover, the cover adapted to be fastened to the base to form a closed container adapted for saving coins. The cover can be mounted to the base by several different methods. In each method, the cover has a raised position which allows the base to be used as an ash tray. Smoke from an article in the ash tray will rise to the underside of the cover and cause changes in the appearance of the cover. The changes in the appearance of the cover indicate to the owner of the ash tray the quantity of smoking that he engages in.

3,811,453
METHOD AND MEANS FOR ATTACHING A HAIR SUPPLEMENT
Cal Bretton, Whitestone, N.Y., assignor to Allen Arthur Co., Inc., Minneapolis, Minn.
Filed Sept. 25, 1972, Ser. No. 291,711
Int. Cl. A41g 3/00
U.S. Cl. 132—53 5 Claims



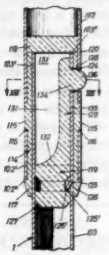
The method and means embodying this invention include fastening a hair supplement to a wearer's head in a semi-permanent manner by means of a plurality of spaced anchoring loops produced by joining together a plurality of strands of the wearer's own hair at a point in spaced relation to the wearer's head and passing an anchoring filament through each loop and an adjacent portion of the underside of the hair supplement thereby positively connecting the hair supplement to the wearer's head for relativley long periods of time. The joining together of the hair strands in the specific embodiment of the invention herein disclosed includes tying two sub-groups of hair strands together in the form of a knot and restricting relative movement of the hair strands forming the knot by applying thereto a free flowing, quick setting hypoallergenic liquid binding agent to prevent the knot from loosening or slipping thus providing substantially fixed anchor points for the anchoring filament attachment means.

3,811,454
STRUCTURAL MEMBRANE ATTACHMENT TO AN ARCH
Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Royal Oak, Mich.
Filed Dec. 22, 1972, Ser. No. 317,509
Int. Cl. E04b 1/347
U.S. Cl. 135—1 R 5 Claims



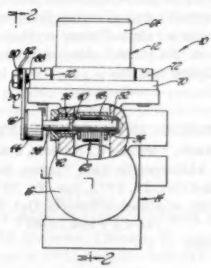
A lightweight tension structure having a multiplicity of arches, strong tensioned membranes attached to and supported by the arches which are anchored to and supported by a common base in such a manner to maintain tension in the membranes and on the attachment of the membranes to the arches. A continuous, structural, weather-tight attachment that can safely transfer the tension forces created in the membranes to the arches, is accomplished by providing a hard beaded membrane edge that is pushed through a continuous arch slot into a recess or cavity adjacent to, and connected to, the arch slot; a lock strip that is inserted into the arch slot to prevent the beaded membrane edge from emerging from the recess when the membrane is tensioned and a retainer at the edge of the slot, or a wedged shape lock strip, to prevent the lock strip from working out of the arch slot.

3,811,455
TELESCOPIC UMBRELLA STICK
Klaus Thur, Solingen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Oct. 18, 1972, Ser. No. 298,488
Claims priority, application Germany, Oct. 21, 1971, 2152459; Oct. 30, 1971, 7141188
Int. Cl. A45b 19/04
U.S. Cl. 135—46 T 4 Claims



In a telescopic umbrella stick wherein there are at least two telescopic sections, there is provided a plug in the stick section of smaller diameter having a shoulder protruding laterally beyond the diameter of the stick section. In the end of the stick section of greater diameter, there is a sleeve fixed thereto and adapted to receive the smaller stick section. In one embodiment, ball spring means are provided for locking the stick sections in an extended position, while in another embodiment, a spring pawl is integral with the plug adapted to engage corresponding apertures in the inner stick section and the outer stick section to lock the stick sections together.

3,811,456
SHUT-OFF VALVE ASSEMBLY WITH CONDITION RESPONSIVE TRIP MEANS
Lowell F. Nelson, Muskegon, Mich., assignor to Enterprise Brass Works, Muskegon, Mich.
Filed Aug. 3, 1972, Ser. No. 277,692
Int. Cl. F16k 17/36
U.S. Cl. 137—39 9 Claims



A temperature and impact responsive shut-off valve assembly including a housing having an upper first section and a lower second section with the upper section having three ears through which bolts extend for securing the two sections together and including a circular O-ring seal groove adjacent the ears for establishing a weakened break-away means to allow a body portion of the upper first section of the assembly to separate from the ears and the lower second section of the valve. A valve is supported on a shaft in the lower second section of the assembly for movement between open and closed

positions, the closed position being one wherein a plastic valve member engages a valve seat in the lower second section. The valve is held in the open position, by a metallic spring strip secured to the body portion of the upper first section and engaging an arm which is secured to a shaft which in turn rotates for moving the valve member between the open and closed positions. A pin extends from the metallic spring strip into a hole in the arm and the spring strip is inherently biased to move the pin out of the hole of the arm so that upon oscillating movement of the arm, the spring strip will disengage the arm allowing the valve member to move to the closed position under the biasing action of a coil spring disposed about the shaft which supports the valve member. Adjacent the spring strip are a pair of metallic strips having different coefficients of thermal expansion for moving the spring strip out of engagement with the arm to allow the valve member to move to the closed position in response to a predetermined temperature. Additionally, the valve seat has a periphery defined by a pointed edge with a recess immediately adjacent thereto for engaging the plastic material of the valve member preventing the extrusion thereof past the valve seat.

3,811,457

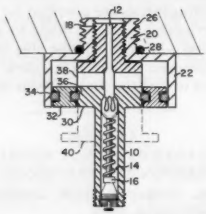
OVER PRESSURIZATION RELEASE DEVICE AND VALVE

Richard L. Crossman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 30, 1971, Ser. No. 185,070

Int. Cl. F16k *17/38, 15/20*

U.S. Cl. 137—73 **8 Claims**



Mechanism for use with an inflation valve for any fluid pressure vessel, such as a pneumatic tire, and including a pressure-triggered release area concentric with the valve and comprising a rupture diaphragm or blow-out piston responsive to excessive fluid pressure and allowing the pressure to escape to the atmosphere at a rate sufficient so that the back pressure down stream in the vessel does not exceed that of the predetermined blow-out level.

3,811,458

PNEUMATIC PULSE DIVERTERS

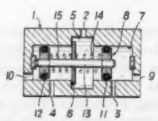
Herbert F. Kuhnelt, Vienna IV., Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

Filed Oct. 27, 1972, Ser. No. 301,515

Claims priority, application Austria, Oct. 29, 1971, 9341/71

Int. Cl. F16k *11/07*

U.S. Cl. 137—106 **4 Claims**



A pulse diverter for directing pneumatic pulses from an inlet alternately to a pair of outlets, the diverter including a piston which at the appearance of each pulse is moved from one terminal position to another to establish a flow path between the inlet and one of the outlets while a control member blocks communication between the inlet and the other outlet and at the termination of each pulse, a drive connection is established between the piston and the control element to move the control element into a position blocking communication between the inlet and the first outlet so that the next pulse will be transmitted to said other outlet after the piston is moved to establish communication between the inlet and said other outlet.

3,811,459

PRESSURE INDICATING VALVE

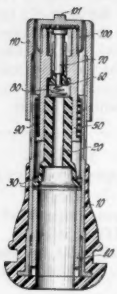
Helmut Schmidt, Pforzheim, Germany, assignor to Helmut Schmidt, Pforzheim and Erwin Fietz, Bassum, both of, Germany

Filed July 13, 1972, Ser. No. 271,521

Claims priority, application Germany, Mar. 13, 1972, ?212002; June 19, 1972, 2229822

Int. Cl. F16k *37/00*

U.S. Cl. 137—227 **8 Claims**



A composite tubular structure defines an internal cavity and consists of a tubular valve holder and a cylinder, which is fixed in said valve holder and formed with external screw threads disposed axially outwardly of said valve holder. A diaphragm is air-tightly fixed in said composite tubular structure and axially divides said cavity into an outer compartment and an inner compartment. A plunger is connected to said diaphragm and axially slidably mounted in said cylinder and formed with a central axial bore, which comprises an axially inwardly facing shoulder and which communicates through said diaphragm with said inner compartment. Said plunger has an outer portion protruding axially outwardly from said cylinder. An axially outwardly facing, tubular spring abutment is connected to said diaphragm and disposed in said bore and axially inwardly spaced from said shoulder. A valve member extends in said bore and comprises a sealing cone disposed between said shoulder and said abutment and tapering toward and adapted to sealingly engage said bore at said shoulder. A helical compression spring is held between said valve member and said abutment and urges said sealing cone toward said shoulder. An indicating cap has internal screw threads in threaded engagement with said external screw threads of said cylinder. Said cap is disposed axially outwardly of said valve holder and has an axial through bore which is larger in diameter than said outer portion of said plunger.

3,811,460

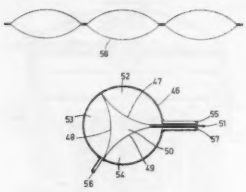
TANK STRUCTURE FOR THE STORAGE AND DISTRIBUTION OF SEVERAL FLUIDS, PARTICULARLY HYDROCARBONS

Pierre Capdevielle, Garches, and Francois Kermarrec, Reeil-Malmaison, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Malmaison and Societe Anonyme pour Tous Appareillages Mecaniques (SATAM), La Courneuve, both of, France

Division of Ser. No. 107,740, Jan. 19, 1971, abandoned, and a continuation-in-part of Ser. No. 887,679, Dec. 23, 1969, abandoned. This application Jan. 8, 1973, Ser. No. 321,966

Int. Cl. B65d *25/00, 85/00*

U.S. Cl. 137—255 2 Claims



A tank for the storage and distribution of a plurality of fluids from several storage chambers located in an enclosure, wherein each of said chambers is limited by at least one fluid-tight wall made of a flexible material which, when unfolded, substantially fills the whole internal volume of the enclosure without being subjected to excessive stresses, and which is provided with inlet and outlet valves for fluid stored in said chambers, said storage chambers being surrounded by a housing of a volume greater than the overall volume of said chambers, the excess volume forming an auxiliary chamber fed with pressurized auxiliary fluid from a source outside said housing, said pressure being transmitted from said auxiliary fluid to said wall of flexible material of each storage chamber and thus to the fluid stored therein.

3,811,461

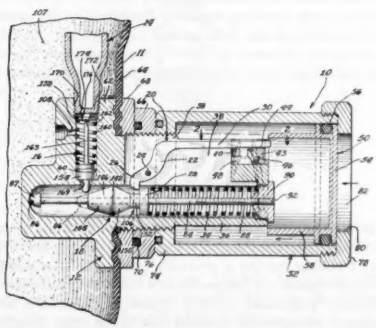
DUAL ACTION TRIGGERING VALVE DEVICE FOR INFLATABLE EQUIPMENT

Joseph F. Novak, 609 State St., Calumet City, Ill.

Filed Jan. 12, 1972, Ser. No. 217,331

Int. Cl. F16k *51/00*

U.S. Cl. 137—318 7 Claims



A dual action triggering valve device for effecting inflation of inflatable equipment, such as life preservers and the like, comprising a valve body that may be attached to the inflatable equipment and includes a compressed gas cartridge puncturing mechanism arranged to be triggered either manually, or alternately, automatically under predetermined ambient pressure conditions.

3,811,462

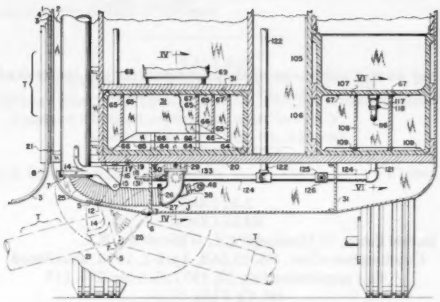
RECREATIONAL VEHICLE UTILITY STOWAGE AND TRANSFER SYSTEM

Jack M. Feliz, 34-808 Via Echo, Palm Springs, Calif.

Filed June 8, 1972, Ser. No. 260,997

Int. Cl. F16k *27/12*

U.S. Cl. 137—344 4 Claims



An improved utility transfer and stowage system for recreational vehicles and other passenger vehicles or the like, comprising a baffled toilet holding tank and respective permanently installed, self-supporting, telescopic drain line assembly, in which the latter is provided with the inherent flexibility to enable its transfer from a stowage to a drain position. The distal end of the above drain line is provided with a water tight plug-in coupling, for connecting to the park sewer receptor, and its upstream end is provided with a permanently installed water wash down jet; a bathtub and integral baffled holding tank, of which the latter is cross connected with the kitchen sink and lavatory drains through suitable piping and valves, thereby providing for the sanitary isolation and controlled diversion of the accumulated drains into either a catch bucket or into the above mentioned toilet holding tank drain line assembly as deemed appropriate; a baffled potable water holding tank and respective permanently installed, precoiled, self-supporting, potable water hose, in which the distal end of the latter is provided with a plug-in adapter coupling, for connecting to the park potable water valve; a precoiled self-supporting electrical entrance cable and a pair of hinged covered carrying tubes for retention of the above mentioned cable and water hose.

3,811,463

OVERHEAD BY-PASS FLOOD CONTROL MEANS

John Dickens, 1724 W. Superior, Chicago, Ill.

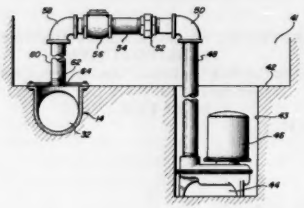
Filed Apr. 9, 1973, Ser. No. 349,027

Int. Cl. E03b *5/02*

U.S. Cl. 137—362 3 Claims

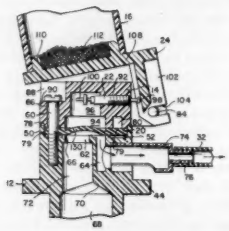
A flood control assembly and system having an improved by-pass pipeline for conveying waste fluids from a sump bottom substantially below the sewer line through an overhead portion of the pipeline which extends to a point substantially above the sewer line, and into the sewer line immediately adjacent a valve which is on the street side to help keep said valve closed against upstream flow. The sewer line has an open T which empties waste sewage on the floor of the chamber so that it can drop to a lowered sump for movement through the conveying pipe under urgings of a submersible

pump. Sections of the pipeline can be serviced and the pump can be serviced by disassembling the pipeline in an improved



way so that either one of these components can be serviced without disrupting the other of the components.

3,811,464
BALLCOCK
Harold Esten, 73 Messenger Ln., Willingboro, N.J.
Continuation of Ser. No. 25,060, April 2, 1970, abandoned.
This application July 10, 1972, Ser. No. 270,117
Int. Cl. F16k *31/18*
U.S. Cl. 137—414 10 Claims

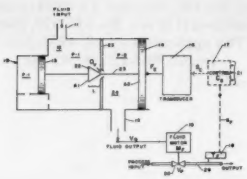


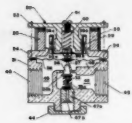
A ballcock for use in a toilet tank comprising a base that is adapted to be connected to a water supply, a cap that is attached to the top of the base with the cap having an opening to receive a pilot valve and the cap also having means to receive a hinge piece, a diaphragm which is received and held in place between the base and the cap with the diaphragm having a central opening, a weight tube having a hinge piece and a float tube being telescopically slidable on the weight tube.

When the water level within the toilet tank drops, the float pivots downwardly to depress the pilot valve which have the effect of venting the space above the diaphragm to atmosphere. In this condition the water pressure in the supply line urges the diaphragm upwardly, and water now flows in a flow passage within the base to an outlet containing a fitting which divides the flow, permitting the major part (approximately 90 percent) to go directly into the tank with the remainder going via a flexible tubing to an overflow tube (which is a part of the toilet tank).

When the desired liquid level is reached within the tank, the float tube is again upright, so that the pilot valve returns to its normally closed position. Fluid pressure quickly builds above the diaphragm until it equals the liquid line pressure below the diaphragm, and at this time the diaphragm returns to its original closed position, and water no longer flows.

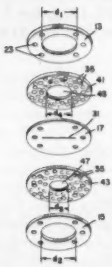
3,811,465
ELECTRIC-FLUIDIC DIRECT PROPORTION CONVERTER
Harold George Abbey, 75 Prospect, East Orange, N.J.
Filed Feb. 16, 1972, Ser. No. 226,677
Int. Cl. F16k *31/06*
U.S. Cl. 137—487.5 2 Claims





A direct proportion converter in which fluid pressure is directly proportioned in magnitude or quantity to an electric current, and broadly an electric to fluid proportioning device for gases or low viscosity liquids. A fluid pressure regulating valve is actuated by changes in equilibrium between an electrically generated force on one side of a diaphragm and the fluid output pressure on the opposite side of the diaphragm.

3,811,466
SLIT DIAPHRAGM VALVE
Jack G. Ohringer, 317 Via Hidalgo No. 24, Greenbrae, Calif.
Filed Apr. 6, 1972, Ser. No. 241,638
Int. Cl. F16k *15/14*
U.S. Cl. 137—493 7 Claims

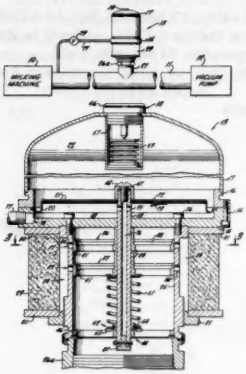


A slit diaphragm valve having a slit diaphragm and a control plate retained in facial contact. The slit diaphragm is a circular sheet of rubber having a centrally positioned elongated slit. The control plate is a flat perforated circular metal plate with a centrally positioned control opening. Fluid flow in one direction is unrestricted whereas flow in the other direction is restricted by the size of the control opening in the control plate. Another embodiment includes a pair of control plates for controlled flow in both directions. Still another embodiment functions as a check valve by employing a perforated control plate having no central opening.

3,811,467
COW MILKING MACHINE SYSTEM, AND VACUUM REGULATOR INCORPORATED THEREIN

Leon Jones, 15081 Moran St., Los Alamitos, Calif.

Filed Feb. 27, 1973, Ser. No. 336,186
Int. Cl. F16k *15/00, 31/12*
U.S. Cl. 137—494 39 Claims



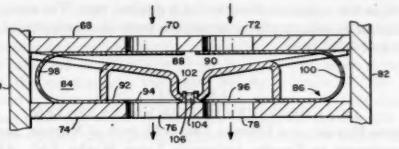
A large vacuum pump is connected through a vacuum line to the cow milking apparatus, and a vacuum regulator is employed to admit into the line the amount of ambient air necessary to maintain the line pressure (and thus the pressure at the milking apparatus) constant within very narrow limits. The vacuum regulator comprises an air valve to control the admission of ambient air, and which is itself controlled by a light bias spring (having a low spring rate) and an opposed diaphragm. One side of the diaphragm is subjected to pressure generally equal to line pressure, whereas the other side of the diaphragm is subjected to pressure of air within a stabilizing and regulating dome. Adjustable means responsive to the pressure differential between the dome and ambient are provided to admit into the dome sufficient air to maintain the dome pressure constant. Furthermore, means are provided to bleed air through the diaphragm, thus maintaining substantially constant the pressure drop thereacross. The air valve is constructed with large radial ports which admit air radially over the thin edge of a slide valve, and in response to only a small valve movement. The very stable and controlled dome pressure, the substantially constant pressure drop across the diaphragm, the light bias spring, and the described air valve construction cooperate to result in extreme sensitivity and low-inertia operation and thus in very close regulation of line pressure.

3,811,468
COMPRESSOR VALVE ASSEMBLY

Friedrich O. Bellmer, Stanhope, N.J., assignor to Fedders Corporation, Edison, N.J.

Continuation-in-part of Ser. No. 233,560, March 10, 1972, abandoned. This application June 8, 1973, Ser. No. 368,350
Int. Cl. F16k *15/14*
U.S. Cl. 137—512.15 12 Claims

A valve chamber in a compressor housing is formed by opposing walls, one of which has a port formed therein for allowing gas to enter the valve chamber. A resilient U-shaped reed is disposed between the opposed walls, said reed having a first end portion adapted to cover the port and a second end portion which is held stationary against the wall opposite the port.

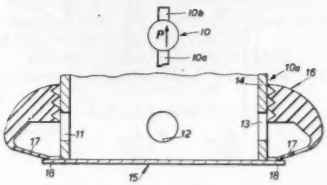


A backer plate is positioned between the first and second end portions to intercept the movement of the first end portion and limit the flexure of the reed.

3,811,469
CHECK VALVE FOR PUMP OR THE LIKE

Hjalmar Elias Fries, Spanga, Sweden, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,437
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.1 6 Claims

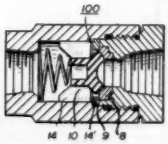


A check valve for a sump pump having a hollow cylindrical intake with ports therethrough, wherein a hollow half-toroid has one side sealed to the intake above or below the ports, a part of the half-toroid and/or an additional part forming an annular flexible lip to seal with the opposite side of the ports, the lip forming a check valve at its location to prevent fluid inside the cylinder from leaking out thereof through the ports.

3,811,470
FLUID CONTROL DEVICE

John W. Schaefer, 1228 Manitou, McHenry, Ill.

Continuation-in-part of Ser. No. 148,400, June 1, 1971. This application Dec. 15, 1971, Ser. No. 208,101
Int. Cl. F16k *15/06*
U.S. Cl. 137—540 7 Claims



A fluid control valve for allowing free flow of fluid in one direction in a fluid line and the restriction or metering of the flow in the opposite direction. The control valve includes a low inertia poppet which is biased into contact with a deformable valve seat for selective movement relative thereto in accordance with the pressure condition within the fluid line in which the valve is connected. One form of the invention the check valve permits free flow in one direction with a minimum

of pressure drop but which completely restrict the flow in the opposite direction. Other embodiments of the fluid control valve possess a return metering member which permits the free flow of liquid in one direction but meters the amount of flow in the opposite direction at a desired rate. The metering member is selectively controllable from the exterior of the control valve body.

3,811,471

DUAL PRESSURE RELIEF VALVE SYSTEM

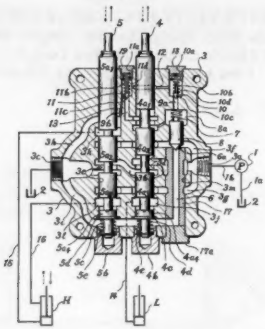
Yasuo Murase, and Shizuka Takeuchi, both of Nagano, Japan, assignors to Toyoda Automatic Loom Works, Ltd., Aichiken, Japan

Filed Dec. 14, 1972, Ser. No. 315,006

Claims priority, application Japan, Dec. 16, 1971, 46-102381

Int. Cl. F16k *11/10*

U.S. Cl. 137—596.13 **6 Claims**



A dual pressure relief valve system comprises a main relief valve, pilot relief valves for controlling the main relief valve at different maximum pressures, and valve spool means for controlling the direction of fluid flow within the system. The device includes internal fluid passages which eliminate the need for external piping.

3,811,472

DISTRIBUTING VALVE

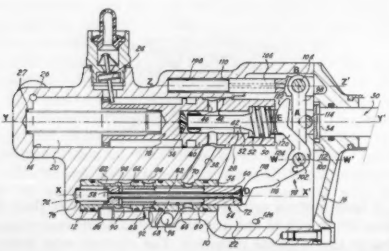
Alain LeMarchand, Domont, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed May 25, 1973, Ser. No. 364,177

Claims priority, application France, June 12, 1972, 72.21054

Int. Cl. F15b *13/04*

U.S. Cl. 137—625.68 **3 Claims**



In a servomotor comprising a boost piston whose movements depend on the working pressure of fluid contained in an actuating chamber, a distributing valve connected to a pressure source and to a reservoir is provided to control said working pressure. The valve consists of a slider which cooperates with an input control linkage and which comprises two annular bearing members axially separated and connected by a spacer, a valve sleeve mounted between the two bearing members and capable of movement relative to the slider and a spring biasing said sleeve in abutment with one of the bearing members.

3,811,473

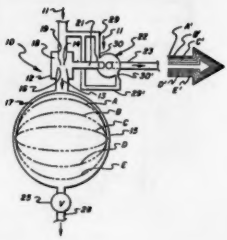
FLUIDIC PRESSURE REGULATOR

Robert Schwarz, Oakland, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 14, 1969, Ser. No. 815,734

Int. Cl. F15c *1/12, 1/16*

U.S. Cl. 137—810 **6 Claims**



In a fluid system, an in-line vented jet is disclosed whose vent is controlled by a vortex valve. Since the control ports of the vortex valve are coupled to a constant upstream pressure any variance in downstream impedance effecting said vent cavity pressure is immediately counter-acted by the vortex valve which acts as a rough pressure regulator for the vented jet cavity, thus maintaining constant pressure recovery regardless of downstream flow changes.

3,811,474

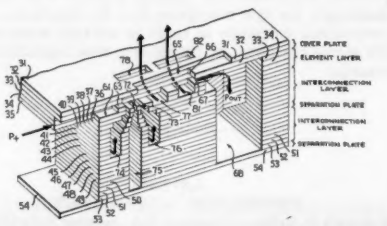
MINIATURIZED FLUIDIC ELEMENT AND CIRCUIT CONSTRUCTION

Peter Bauer, Germantown, and Romald E. Bowles, Silver Spring, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Jan. 26, 1973, Ser. No. 327,128

Int. Cl. F15c *5/00*

U.S. Cl. 137—833 **15 Claims**



A miniaturized fluidic element is formed from a stack of thin laminations wherein passages and ports are defined as straight-edged through openings. A power stream is issued from a nozzle in a plane parallel to the laminations and is selectively deflected out of that plane. Critical element dimensions are defined by one or more lamination thicknesses and are repeatible from element to element. An integrated fluidic

circuit includes a layer of multiple identical co-planar elements bonded to one or more interconnection layers. Each interconnection layer is a stack of multiple laminations through which passages are defined for interconnecting the elements. Multiple integrated circuits form a module with plug-in terminals which permit plural modules to be interconnected in a compact stack.

3,811,475

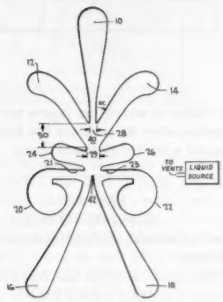
FLUERIC GAS-TO-LIQUID INTERFACE AMPLIFIER

Robert L. Woods, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1972, Ser. No. 302,453

Int. Cl. F15c *1/14*

U.S. Cl. 137—840 **1 Claim**



A flueric amplifier for controlling the flow of a liquid power jet by means of gaseous control pressure signals. The foregoing is accomplished without any moving parts. Substantially complete segregation of fluids is achieved. The amplifier operates with gaseous pressure-field deflection of a slightly turbulent liquid power jet. The amplifier has infinite input resistance and achieves single stage pressure gains in the neighboord of 25 along with extremely high power gains. The amplifier has a dynamic range and a bandwidth suitable for many applications.

3,811,476

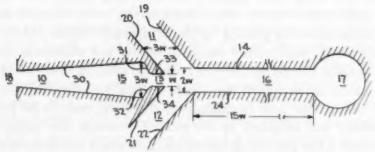
PURE FLUIDIC DE-COUPLER

Tadeusz M. Drzewiecki, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1973, Ser. No. 355,126

Int. Cl. F15c *1/00*

U.S. Cl. 137—842 **7 Claims**



This invention relates to pure fluidic units and devices, and more particularly to impedance-matching in pure fluid devices. Accordingly a pure fluid device is provided for the purpose of de-coupling one fluidic unit from another when they are staged. The fluidic de-coupler of the instant invention utilizes a novel two-sided vent design in the receiver line of the fluidic unit. Specifically, a square velocity profile is obtained in the receiver line by passing the flow in the receiver through an expanded portion of the line, that is, a plenum, then through a moderate contraction having a specified width W. Vents are then provided to either side of the receiver line down stream from the contraction, the vents having a width of 3W. A catcher portion of the receiver line is disposed further down stream from the vents, the catcher portion having a width of 2W, or double the receiver nozzle or contraction width. The square profile jet issuing from the nozzle of the receiver entrains about 100 percent flow over a 3W distance. This velocity profile does not decay over the distance of the actual vents provided in the de-coupler. This de-coupler design incorporating 2W as a width of the catcher is such to entrain substantially all of the flow. The de-coupler is designed such that the catcher length is 15W. This catcher length maximizes the block load pressure recovery such that the flow distributes itself evenly in the catcher.

3,811,477

BUOYANT LIQUID-CONVEYING HOSE

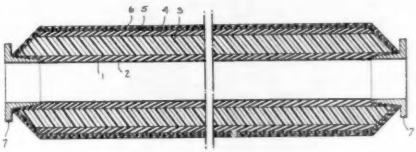
Clive S. Thawley, Colinton, Scotland, assignor to Uniroyal Limited, Newbridge, Midlothian, Scotland

Filed Dec. 13, 1972, Ser. No. 314,900

Claims priority, application Great Britain, Dec. 16, 1971, 58460/71

Int. Cl. F16l *11/12*

U.S. Cl. 138—103 **6 Claims**



A buoyant liquid-conveying hose in which a hose body is surrounded by a first layer of buoyancy material with a second layer of different buoyancy material surrounding the first layer and a water-impermeable covering over the second layer. The compression modulus of the buoyancy material of the first layer is greater than that of the second layer.

3,811,478

TUBE WALL

Stein Alexander Marcel Ahlqvist, Sodra Kungsvagen 269, Lidingo, Sweden

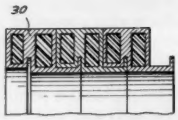
Continuation of Ser. No. 872,207, Oct. 29, 1969. This application Nov. 11, 1971, Ser. No. 198,004

Int. Cl. F16l *9/16*

U.S. Cl. 138—154 **5 Claims**

A tube wall is formed by spirally winding in abutting relationship a flexible hollow strip of substantially rectangular cross-sectional outline, the outside of the wound strip constituting the outer wall of the hose and the opposite the inner wall of the hose. The strip defines therein a continuous

chamber and the inside of the strip is extended to form an extension terminating in an upwardly turned lip. Each of these lips is engaged with a slot in the inside wall of the adjacent



strip turn to lock the turns of the strip against axial separation. The continuous chamber in the strip is filled with a suitable hardened plastic material.

3,811,479

SELVEDGE FORMING APPARATUS IN SHUTTLELESS LOOMS

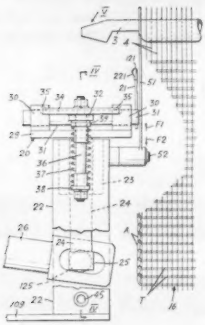
Adriano Gardella, 24B, Via Al Capo di Santa, Genoa, Italy

Filed June 12, 1972, Ser. No. 261,955

Claims priority, application Italy, June 21, 1971, 12761 A/71

Int. Cl. D03d 47/36

U.S. Cl. 139—124 A **2 Claims**



A method is disclosed for the formation of a selvedge in shuttle-less weaving looms, in which, at every one of its forward and backward runs through the warp shed, the weft inserter inserts a double weft thread, that is a twofold-bent weft thread, thus forming a continuous weft having loops on either side of the cloth which are formed by the weft inserter reversing its transverse motion, wherein the loops formed in the sequentially inserted double weft are engaged with one another, on the side of the fabric lying opposite to the entrance side of the weft inserter, in such a manner as to form at least one loop row or chain. Preferably the loop formed in each double weft thread is threaded through the loop of the preceding double weft thread. A device for performing this method is disclosed, wherein a selvedge-forming needle is arranged on the side of the cloth lying opposite to the entrance side of the weft inserter, and is automatically operable in synchronism with the weft inserter in such a manner as to pick up the loop of every new double weft thread which has been inserted by the weft inserter, and to slip them off the loop of the preceding double weft thread, which has been picked up and slipped on the needle shank at the time of the preceding weft insertion, thus causing the loop of the preceding double weft thread to be slipped through the loop of the preceding double weft thread and thus threading the loop of the new double weft thread onto the needle shank.

3,811,480

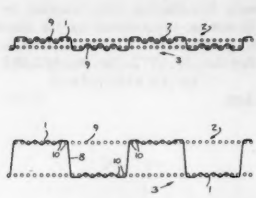
MULTI-LAYER FABRIC

Felix Villiger, Niederlenz, and Albert Gerber, Birrwil, both of Switzerland, assignors to Arova Schaffhausen AG, Schaffhausen and Losinger AG, Berne, both of, Switzerland

Continuation of Ser. No. 46,240, June 15, 1970, abandoned. This application May 22, 1972, Ser. No. 255,908

Int. Cl. D03d 3/00

U.S. Cl. 139—384 **6 Claims**



Multi-layer fabric in which the layers are joined by threads extending therebetween to connect the layers while allowing same to be spaced a limited distance apart.

3,811,481

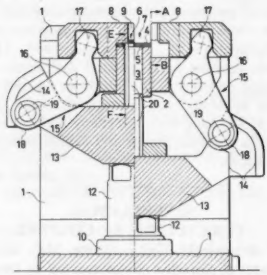
SEALING TONGS

Karl Johan Back, Helsinki, Finland, assignor to Oy Cyklop AB, Helsinki, Finland

Filed Oct. 11, 1972, Ser. No. 296,613

Int. Cl. B21f 9/02

U.S. Cl. 140—93.2 **4 Claims**

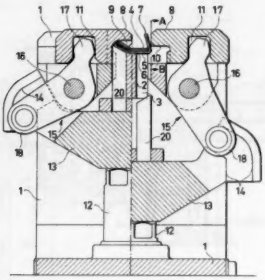


For attaching the ends of a metallic strap to each other there is used sealing tongs having a base fixed to a frame structure and provided with notches; at least two jaw elements fitted to the frame structure so as to slide transversally in relation to the strap and linearly towards and away from each other essentially on the same level as the strap, the jaw parts being adapted to be placed on the strap ends which are on top of each other, and on the surfaces of the jaw elements which come against the strap there are several spaced notches in the longitudinal direction of the strap; several punches on the opposite side of the base in relation to the strap ends to be joined and which are adapted to be moved towards the band and away from it for punching the strap ends when the punches are pressed into the notches in the jaw elements through the notches in the base; and means fitted to the frame structure for guiding the jaw elements and the punches and for actuating them synchronically in relation to each other so that the punches punch the strap seal essentially only when the jaw elements are in a position closest to each other.

3,811,482
SEALING TONGS

Karl Johan Back, and Ragnar Ilmari Olof Walhelm, both of Helsinki, Finland, assignors to Oy Cyklop AB, Helsinki, Finland

Filed Oct. 11, 1972, Ser. No. 296,510
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.4 **6 Claims**



Sealing tongs for attaching the ends of a metallic or non-metallic strap to each other with a strap seal manufactured from a plate-like blank have having a base portion on a frame structure; at least two jaw means fitted to the frame structure and adapted for slidable movement transversally in relation to the strap and linearly towards and away from each other on the same plane to bend the collars of the strap seal blank against the strap as the jaw means approach each other; those surfaces of the jaw means which come against the collars being provided with several spaced notches in the longitudinal direction of the strap; several punches on the same level as the ends to be joined or on the opposite side of the base in relation to the ends, and adapted to be moved towards and away from the strap seal for corrugating and/or punching the strap ends and the strap seal parts surrounding them, when the punches are pressed into the notches in the jaw parts from both sides of the base or through the notches in the base; and means fitted to the frame structure for guiding the jaw parts and the punches and for actuating the same synchronically in relation to each other so that the punches corrugate and/or punch the strap seal essentially only when the jaw parts are closest to each other.

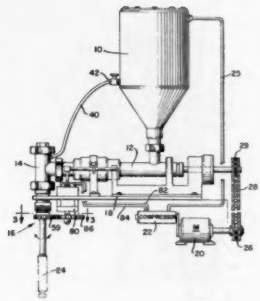
3,811,483
AUTOMATED SYSTEM AND METHOD FOR FILLING CONTAINERS WITH VISCOUS MATERIALS

David J. Morrison, Plainfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 142,270, May 11, 1971, abandoned. This application Apr. 26, 1972, Ser. No. 247,549
Int. Cl. B65b *3/04*, *1/04*
U.S. Cl. 141—1 **15 Claims**

Automated filling system including a reservoir, a motor and a rotary actuator supplying power to the system, a filler head, means for advancing the viscous material from the reservoir to the filler head, a rotatable cutting head depending from the filler head to (1) discharge viscous materials therethrough into a series of containers, and (2) cleanly sever the viscous materials after each container has been filled. The cutting head includes a first hollow tube that is open at its upper end and has a semicircular opening and a semicircular planar surface at its lower end, and a second, slightly larger hollow tube that is open at its upper end and has a semicircular cutting blade and a semicircular opening at its lower end. The tubes are concentrically mounted, and the rotary actuator periodically drives the tubes relative to each other. A thrust washer and resilient O-ring absorb axial movement of the tubes.

During the filling phase, the semicircular openings in the tubes are aligned so that the viscous material is forced into the container which may be held in a telescoping relationship to

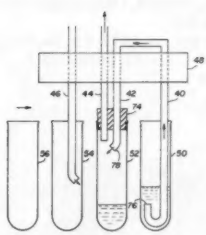


the tubes. At a predetermined point in the cycle of operation, the rotary actuator imparts relative rotation to the tubes so that the cutting blade cooperates with the planar surface to cleanly shear the viscous material.

3,811,484
METHOD AND APPARATUS FOR DELIVERING A PREDETERMINED VOLUME OF A LIQUID

Eduard Engelbrecht, Route de Saverny 83, 1290 Geneva, Switzerland

Continuation-in-part of Ser. No. 153,055, June 14, 1971, which is a continuation of Ser. No. 844,088, July 23, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,649
Int. Cl. B65b *3/30*; B67d *5/54*; B65b *3/14*
U.S. Cl. 141—7 **13 Claims**



The present invention resides in a method and apparatus suitable for laboratory or like use for transferring from one container a measured quantity of a liquid into a second container, this being accomplished by establishing a pressure difference preferably by suction applied temporarily to the second container, the first container having in it a dip pipe extending down to a selected level and leading into the second container through a stopper.

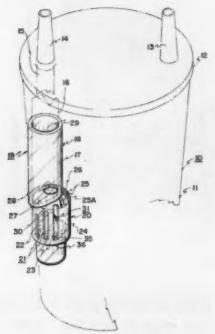
3,811,485
VALVE AND RELATED STRUCTURE FOR VACUUM OPERATED LIQUID-FILL BOTTLES

Le Grand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed May 8, 1972, Ser. No. 250,982
Int. Cl. A61m *1/00*; A61c *17/04*
U.S. Cl. 141—59 **12 Claims**

Valve structure for vacuum operated liquid-fill bottles, comprising a float valve having peripherally located air

passage-way vents in addition to shield means. The shield means is designed and positioned such that solid matter as might be contained within a liquid will not tend to flow into and hence clog the valve structure. To insure proper operation



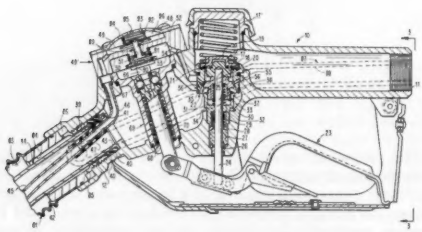
of the float valve such that the same will not be "sucked" to either side of the included valve cage or upwardly, air vents are provided essentially completely around the valve body portion of the structure and above the shield or partition used.

3,811,486

AUTOMATIC SHUT-OFF NOZZLE RESPONSIVE TO MORE THAN ONE CONDITION IN A TANK BEING FILLED

Chester W. Wood, Milford, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,238
Int. Cl. B65b *1/30*
U.S. Cl. 141—208 **9 Claims**



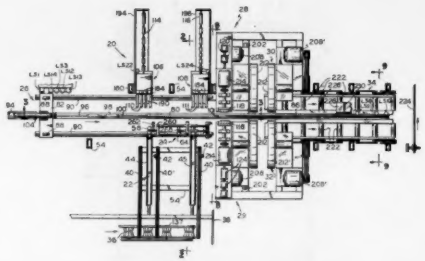
An automatic shut-off nozzle has a pair of diaphragms with a first diaphragm being responsive to the vapor pressure in the tank which is being filled exceeding a predetermined pressure so as to block communication with a second diaphragm, which is subjected to a partial vacuum, with the tank being filled whereby the second diaphragm moves due to an increase in the partial vacuum acting on said second diaphragm to cause closing of a manually operated valve which stops flow through the nozzle. When the liquid in the tank reaches a predetermined level, the second diaphragm moves due to the partial vacuum acting on said second diaphragm being increased so as to cause the valve to again be closed.

3,811,487

AUTOMATIC SAWMILL

Lyle D. Warren, 500 Birch St., Sweet Home, Oreg., and Robert W. Brewster, 5924 S.E. McNary Rd., Milwaukee, Oreg.

Filed Oct. 19, 1971, Ser. No. 190,589
Int. Cl. B27b *1/00*
U.S. Cl. 144—312 **6 Claims**



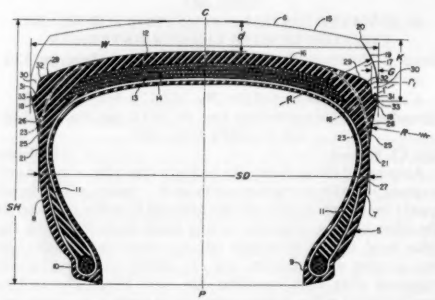
In an automatic sawmill, a caliper device measures the diameter of an incoming log and the log is then positioned against a pair of backstands over a log receiving carriage. A plurality of cutting devices are positioned relative to the carriage, and the speed control for the carriage is predetermined, in response to the log diameter. The diameter measurement is supplied to data processing circuitry which provides outputs indicative of "sets" to be taken by the aforementioned backstands and cutting devices for sawing the log into a number of cants, boards, or slabs in a manner making optimum use of the log content.

3,811,488

TIRE WITH AN UPPER SIDEWALL PROTECTOR

Ethel Lee Duncan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 21, 1972, Ser. No. 282,888
Int. Cl. B60c *11/04*
U.S. Cl. 152—209 R **14 Claims**



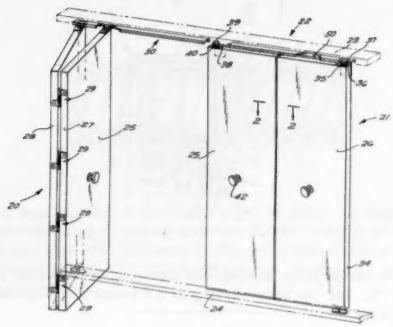
A radial tire provided with a plurality of tread rib extensions which are disposed in the upper sidewalls of the tire and project outwardly of the sidewalls to protect them from pointed rocks and other sharp-edged objects which could pierce the sidewalls and ruin the tire.

3,811,489

BIFOLD DOOR SYSTEM

Leonard Thun, Bay Park, and Leon David Grebow, Bronx, both of N.Y., assignors to Acrite Industries, Inc., New York, N.Y.

Filed Oct. 17, 1972, Ser. No. 298,333
Int. Cl. E06b 3/48
U.S. Cl. 160—118 10 Claims



A bifold door system which includes a door frame having top and bottom walls. A trackway is mounted on one of the walls. A pair of door panels hinged together along adjacent vertical edges are associated with the frame with one of the panels being pivotally mounted at its top and bottom to the frame to enable the panel to rotate between a closed position substantially flush with the door frame and an open position out of the plane of the frame. The other panel has means thereon movably mounted in the trackway so as to permit the panel to be shifted between a closed position substantially flush with the door frame and an open position out of the plane of the frame. The hinged connection between the panel permits the panels to be opened to a substantially face-to-face interengagement and to bias the panels into a closed position substantially flush with the door frame and maintain a continuing bias to retain the door panels in the closed position thereby requiring a predetermined force to open the door and permit passage through the door frame. Finally, resilient retention means are on the trackway to allow shifting of the hinged panels to the open position and then to retain the panels in substantially the open position until a predetermined force is applied at which time the retention means will release the panels and allow the bias means to automatically return the panels to the closed position.

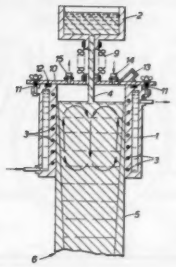
3,811,490

CONTINUOUS CASTING OF RIMMING STEEL

Malcolm Cecil Middleton, Dodworth nr. Barnsley, and Henry Bassell Lloyd, Horsham, both of England, assignors to British Steel Corporation, London, England

Continuation-in-part of Ser. No. 124,825, March 16, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 347,994
Int. Cl. B22d 11/02, 27/02
U.S. Cl. 164—49. 4 Claims

In the production of steel by the continuous casting technique, a steel having a negatively segregated outer surface layer is made. An electromagnetic field is applied to the molten steel in the mould by coils surrounding the mould so that the steel is stirred with a rotary motion and passes over the outer solidifying layer in a direction parallel to the longitudinal axis of the cast strand and returns through the centre of



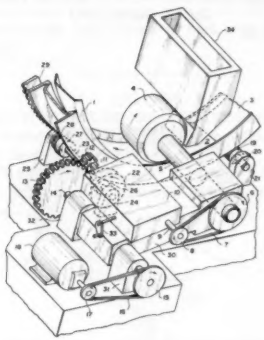
the mould. The steel supplied to the continuous casting mould is in a deoxidised or partially deoxidised state.

3,811,491

METHOD AND APPARATUS FOR MINIMIZING SURFACE DEFECTS ON ITR CAST STRIP

Charles Christian Gerding, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,022
Int. Cl. B22d 11/06
U.S. Cl. 164—87 8 Claims



The formation of surface wrinkles, cracks and tears during Inside-The-Ring casting of strip is minimized by providing a slightly slower speed of the casting drum surface relative to that of the ring casting surface.

3,811,492

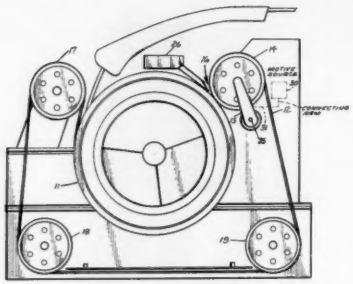
CASTING MACHINE WITH COMBINED PRESSER-BAND GUIDE WHEEL

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 8, 1972, Ser. No. 251,208
Int. Cl. B22d 11/06
U.S. Cl. 164—278 4 Claims

The invention disclosed is a combination presser-band guide wheel for guiding an endless flexible band into closed relationship with a portion of the peripheral groove of a

rotatable casting wheel. The presser-guide wheel is positioned adjacent the periphery of the rotatable casting wheel on a

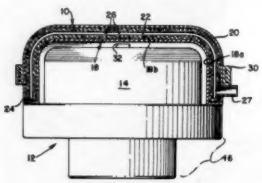


pivot arm and is arranged to press a flexible band into positive contact with the casting wheel at or near the point where molten metal first contacts the casting wheel.

3,811,493
THERMAL SHIELD

Donald J. Bilinski, Dover; Lawrence S. Galowin, Upper Saddle River, and Michael Napolitano, Mendham, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Division of Ser. No. 26,641, April 8, 1970, Pat. No. 3,675,711. This application Oct. 14, 1971, Ser. No. 189,463
Int. Cl. G05d *23/00*
U.S. Cl. 165—32 **2 Claims**



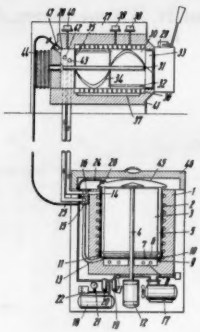
A thermal shield consisting of a pair of walls forming an enclosed space. A heat exchange fluid is disposed in the space between the walls and is maintained at a working temperature whereby it changes in phase in response to changes in temperature along one of the walls.

3,811,494
ICE CREAM MACHINE

Waldemar Menzel, Burghaig, Germany, assignor to Firma Ireks Arkady GmbH, Kulmbach, Germany

Filed Aug. 10, 1972, Ser. No. 279,381
Claims priority, application Germany, Aug. 10, 1971, 2139917
Int. Cl. F25c *7/14*
U.S. Cl. 165—65 **4 Claims**

A device for the preparation and dispensing of soft ice cream, sherbert or flavored ice has two spacially separated and distinct chambers connected by means of elongated supply tubes, one chamber serving as a storage container in

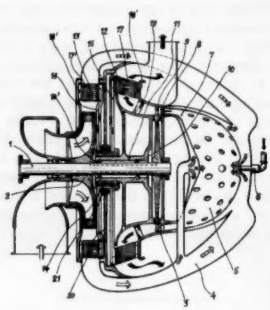


which refrigerating, heating, and sterilizing functions are carried out, and the other serving as a freezing and dispensing container.

3,811,495
ROTARY HEAT EXCHANGERS IN THE FORM OF TURBINES

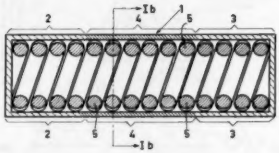
Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Filed Oct. 26, 1970, Ser. No. 84,097
Int. Cl. F28d *11/04*
U.S. Cl. 165—85 **8 Claims**



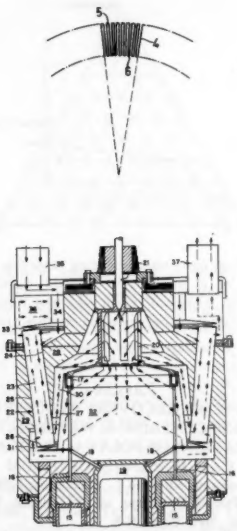
A rotary heat exchanger, in which an internally circulating heat-carrying fluid thermally interacts with an external fluid of different temperature, is set in rotary motion by the kinetic force of either of these fluids acting upon a set of turbine blades on a rotary member carrying the heat-exchanging surfaces. In one embodiment, the rotary member forms a header centered on the axis of rotation and carries a set of axially extending tubes which communicate with the header at one end and are closed at the opposite end; the tubes are embraced by annular fins at locations remote from the header and are arrayed in a plurality of concentric groups, their lengths decreasing progressively from the outermost to the innermost group.

3,811,496
HEAT TRANSFER DEVICE
George Albert Apolonia Asselman, and Adrianus Petrus Dirne, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 2, 1972, Ser. No. 303,270
Claims priority, application Netherlands, Nov. 6, 1971, 7115318
Int. Cl. F28d 15/00
U.S. Cl. 165—105 10 Claims



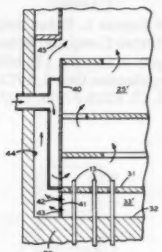
A heat transfer device (heat pipe) in which the layer of material having a capillary structure for the transport of condensate from the condensor to the evaporator is formed by helically wound wire which has grooves transversely to the axis of the wire.

3,811,497
HEAT EXCHANGER
Roelf Jan Meijer; Gregorius Theodorus Maria Neelen, and Jules Herman Vree, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 21, 1972, Ser. No. 246,138
Claims priority, application Netherlands, Apr. 29, 1971, 7105840
Int. Cl. F28d 7/10
U.S. Cl. 165—157 2 Claims



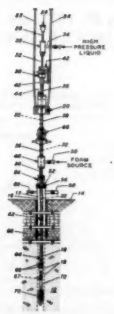
An annular heat exchanger having conically shaped inner and outer walls with a space between said walls occupied by a zig-zag folded strip of material forming several flow ducts. The strip is initially a straight blank that is folded so that the partitions between the ducts extend radially and each partition has the shape of an isosceles trapezium or trapezoid.

3,811,498
INDUSTRIAL TECHNIQUE
John J. Ferraro, Barberton, Ohio, and Bertrand Norval McDonald, Lynchburg, Va., assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Apr. 27, 1972, Ser. No. 248,199
Int. Cl. F28b 9/22
U.S. Cl. 165—161 3 Claims



An illustrative embodiment of the invention shows an heat exchanger for converting the secondary coolant feedwater in a nuciear power reactor system into superheated steam. The tube sheet adjacent to the feedwater inlet nozzle is protected from thermal shock by discharging the feedwater directly into the economizer and establishing a controlled secondary coolant flow or leakage from the economizer along the terminal portion of the tube bundle to the tube sheet. The heat absorbed in the secondary coolant flowing toward the tube sheet raises the coolant temperature and protects the sheet from thermal shock. The secondary coolant that collects between the economizer and the adjacent tube sheet, moreover, can be reintroduced to the tube bundle or bled from the secondary coolant loop.

3,811,499
HIGH PRESSURE JET WELL CLEANING
Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Division of Ser. No. 150,536, June 7, 1971, Pat. No. 3,720,264. This application July 24, 1972, Ser. No. 274,720
U.S. Cl. 166—67 5 Claims



Method and apparatus for directionally applying high pressure jets to well liners to clean openings which are plugged with foreign matter. High velocity jets of liquid having a velocity in excess of 700 feet per second are jetted from jet orifices having a standoff distance between 5 and 10 diameters

of the orifice from the openings to remove substantially all plugging material from the openings. Apparatus for circulating foam is provided in combination with apparatus for delivering high pressure jets. New swivels and check valves permit rotation and reciprocation of the jet tool and tubing string while maintaining high pressure in the apparatus.

3,811,500

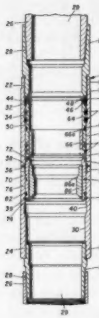
DUAL SLEEVE MULTIPLE STAGE CEMENTER AND ITS METHOD OF USE IN CEMENTING OIL AND GAS WELL CASING

O. L. Morrisett, and Eugene E. Baker, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 139,095, April 30, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 294,426

Int. Cl. E21b *27/00, 33/132*

U.S. Cl. 166—154 **4 Claims**



This invention relates to a cementing tool used in oil and gas well multiple stage cementing operations, and more particularly to a cementing tool having an elongated case containing a plurality of ports, and two sliding sleeves within the case. The two sleeves, positioned in tandem relation one with the other, provide fluid tight seals between the ports and the interior of the cementing tool.

3,811,501

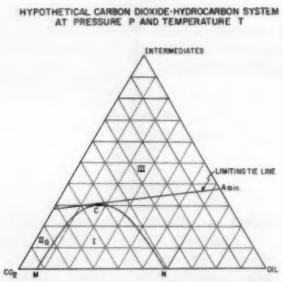
SECONDARY RECOVERY USING CARBON DIXOIDE AND AN INERT GAS

David B. Burnett, Houston; Robert B. Alston, Missouri, and Frank H. Lim, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 27, 1972, Ser. No. 275,587

Int. Cl. B21b *43/22*

U.S. Cl. 166—252 **9 Claims**



Recovery of oil from an oil-bearing reservoir is effected by the injection of a mixture of carbon dioxide and an inert gas in a critical ratio whereby there is formed a miscible transition zone between the mixture and the reservoir oil.

3,811,502

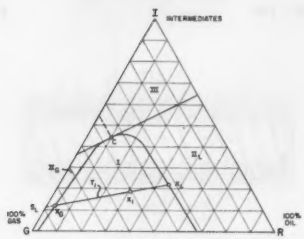
SECONDARY RECOVERY USING CARBON DIOXIDE

David B. Burnett, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed July 27, 1972, Ser. No. 275,588

Int. Cl. E21b *43/22*

U.S. Cl. 166—252 **9 Claims**



Recovery of oil from an oil-bearing reservoir is effected by the injection of carbon dioxide into the reservoir at a pressure whereby there is formed a miscible transition zone between the carbon dioxide and the reservoir fluid.

3,811,503

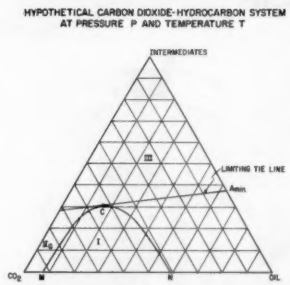
SECONDARY RECOVERY USING MIXTURES OF CARBON DIOXIDE AND LIGHT HYDROCARBONS

David B. Burnett, and Frank H. Lim, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 27, 1972, Ser. No. 275,589

Int. Cl. E21b *43/22*

U.S. Cl. 166—252 **9 Claims**



Recovery of oil from an oil-bearing reservoir is effected by the injection of a mixture of carbon dioxide and light hydrocarbons in a critical ration whereby there is formed a miscible transition zone between the mixture and the reservoir oil.

3,811,504

SURFACTANT OIL RECOVERY PROCESS USABLE IN FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATIONS OF POLYVALENT IONS SUCH AS CALCIUM AND MAGNESIUM

Kenoth H. Flournoy; Ricardo L. Cardenas; Gilbert L. Haferkamp, and Russell D. Shupe, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

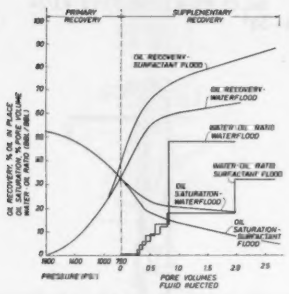
Filed Feb. 9, 1973, Ser. No. 330,933

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **30 Claims**

A three component surfactant system usable in the presence of from about 1,500 to about 12,000 parts per million polyvalent ions, such as calcium and/or magnesium, and a

method of using said surfactant system for recovering petroleum from subterranean formations, said surfactant system comprising a water soluble salt of an alkyl or alkylaryl sulfonate anionic surfactant plus a water soluble salt of an alkyl polyethoxy sulfate anionic surfactant plus a nonionic surfactant such as a polyethoxylated alkyl phenol, a polyethoxylated aliphatic alcohol or a fatty acid mono- or dialkanolamide.

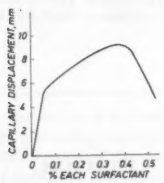


3,811,505

SURFACTANT OIL RECOVERY PROCESS USABLE IN FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATIONS OF POLYVALENT IONS SUCH AS CALCIUM AND MAGNESIUM

Kenoth H. Flournoy; Ricardo L. Cardenas; Gilbert L. Haferkamp, and Russell D. Shupe, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,265
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **18 Claims**



A dual surfactant system usable in the presence of from about 500 to about 9,000 parts per million polyvalent ions, such as calcium and/or magnesium, and a method of using said surfactant system for recovering petroleum from subterranean formations, said surfactant system comprising a water soluble salt of an alkyl or an alkylaryl sulfonate or phosphate wherein the alkyl chain has from 5 to 25 carbon atoms, plus a nonionic surfactant such as a polyethyoxylated alkyl phenol or a polyethyoxylated aliphatic alcohol.

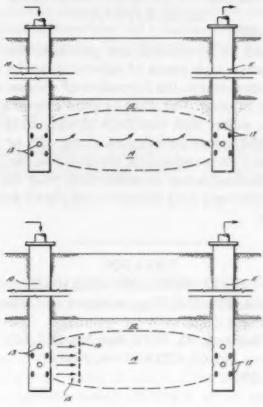
3,811,506

TAR SAND RECOVERY METHOD

Joseph T. Carlin, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,391
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **10 Claims**

Bitumen may be efficiently and economically extracted from tar sand deposits in situ by imbibition flooding. The imbibition flooding is performed in two general steps. First, the tar sand deposits are contacted with a bitumen solvent followed by a soak period to allow imbibition of the solvent.



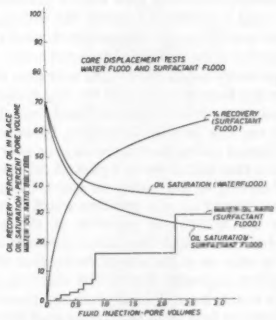
Next, the tar sands are contacted with an aqueous fluid followed by a soak period to allow imbibition. The freed bitumen is then produced by conventional means.

3,811,507

SURFACTANT OIL RECOVERY PROCESS USABLE IN FORMATIONS CONTAINING WATER HAVING HIGH CONCENTRATION OF POLYVALENT IONS SUCH AS CALCIUM AND MAGNESIUM

Kenoth H. Flournoy, and Russell D. Shupe, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,117
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **22 Claims**


CORE DISPLACEMENT TESTS
WATER FLOOD AND SURFACTANT FLOOD
% RECOVERY (SURFACTANT FLOOD)
OIL SATURATION (WATERFLOOD)
WATER/OIL RATIO (SURFACTANT FLOOD)
OIL SATURATION-SURFACTANT FLOOD
OIL RECOVERY - PERCENT OIL IN PLACE
OIL SATURATION - PERCENT PORE VOLUME
WATER/OIL RATIO - BBL/BBL
FLUID INJECTION-PORE VOLUMES

A two component surfactant system usable in the presence of from about 3,000 to about 18,000 parts per million polyvalent ions, including calcium and or magnesium, and a method of using said dual surfactant system for recovering petroleum from subterranean formations, said surfactant system comprising a water soluble salt of a linear alkyl or a linear alkylaryl sulfonate first anionic surfactant plus a water soluble salt of an alkyl polyethoxy sulfate second anionic surfactant.

3,811,508

METHODS FOR SELECTIVE PLUGGING

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

Filed July 10, 1972, Ser. No. 270,244
Int. Cl. E21b 33/13
U.S. Cl. 166—288 4 Claims

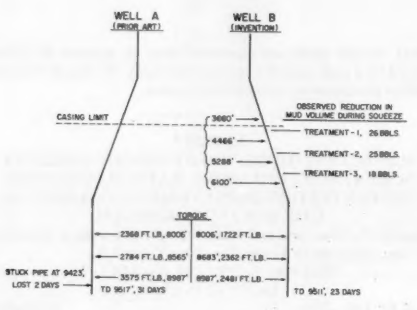
Methods and compositions are provided for selectively plugging the water-rich strata of subterranean formations, including the injection into the formation of a water-soluble, oil-insoluble soap or ester. The soap or ester chemically reacts in the formation, either with reactants already in the formation or reactants which may be injected along with or prior to the soap or ester, to produce a water-insoluble, oil-soluble product which is effective to selectively plug the water-rich strata over a relatively long distance and over a relatively long period of time.

3,811,509

WELL DRILLING METHOD

Frank D. Priebe, Houston, Tex., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 31, 1972, Ser. No. 285,143
Int. Cl. E21b 21/04, 33/138
U.S. Cl. 166—293 26 Claims



A method is disclosed for reducing drilling torque and preventing sticking of drilling pipe when a permeable formation such as sand is penetrated during the drilling of a well. The reduction in drilling pipe torque which results is particularly advantageous in the drilling of deviated holes.

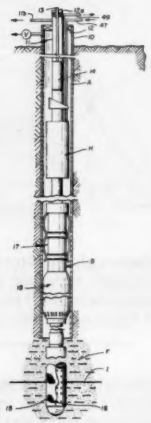
A slug of gel slurry is deposited in the hole after the permeable formation has been entered, and the slug is then squeezed at a calculated pressure which causes liquid from the slurry to migrate from the hole into the formation. However, the bulk of the gel is filtered out by the formation at or near the wall of the hole, and is thus laid down as a packed cake with the formation itself serving as the matrix on which the cake forms. The squeeze is carried out at a pressure which is substantially greater than the hydrostatic pressure at the point being squeezed and at least equals the greatest pressure which is expected to exist later on at the side of the squeeze after drilling has proceeded to a greater depth. The resulting gel cake is dense enough to seal the wall of the hole and thereby substantially negates loss of fluid from the drilling mud into the formation. Preventing loss of fluid into the formation by means of the gel cake also provides the additional advantage of curtailing inward growth of the hole wall by build-up of drill cuttings thereon. Circulation of drilling mud remains adequate and provides good lubrication between the pipe and the wall of the hole even during sharply deviated drilling. As drilling continues, the integrity of the gel cake is not detrimentally affected by further elevation of pressure where the cake resides in the hole since the squeeze pressure for the formation thereof was at least as great as will later exist at that point from use of higher density drilling mud, greater casing pressure, etc.

3,811,510

WELL PUMPING METHOD AND APPARATUS

Joe C. Rogers, 216 Lisa Ln., Palestine, Tex., and Brown J. Woolley, P.O. Box 1249, Kilgore, Tex.

Filed May 28, 1971, Ser. No. 147,870
Int. Cl. E21b 23/00, 33/12, 43/24
U.S. Cl. 166—307 15 Claims



A method and apparatus for improving the efficiency of a well pump are disclosed. The method includes controlling the elevation at which the well fluids enter the well to thereby control the amount of each fluid, i.e., oil and water, being lifted by the well pump and further contemplates the cooling of the well fluids prior to their passage to the pump, whereby pumping efficiency is increased. This abstract is not to be construed in any way to define or limit the invention set forth below.

ERRATUM

For Class 168—34 see:
Patent No. 3,811,512

3,811,511

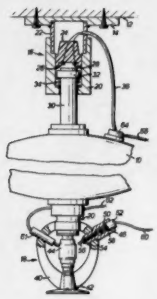
FIRE EXTINGUISHING SYSTEMS

Alister L. McCulloch, Moorabbin, Victoria, Australia, assignor to Graviner (Colnbrook) Limited, London, England

Filed July 13, 1972, Ser. No. 271,590
Claims priority, application Australia, July 12, 1971, 5505/71
Int. Cl. A62c 25/00
U.S. Cl. 169—28 16 Claims

A fire extinguishing system is disclosed comprising several self-contained extinguishers. Each includes a thermally-rupturable bulb for releasing the extinguishant in response to detection of incipient fire conditions in the neighborhood of that extinguisher, electrically operated discharge means also capable of releasing the extinguishant, and one or more electrical switches operated in response to discharge of the extin-

guishant. In the system, the electrical switches of all the extinguishers are interconnected with the electrically operated

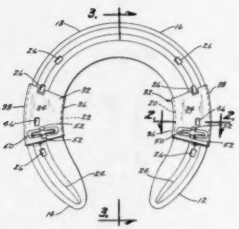


discharge means of all the extinguishers so that operation of any one of the extinguishers by rupture of its bulb causes operation of each other extinguisher in the system.

3,811,512
MUD CLIP FOR A HORSESHOE

Robert A. Sirles, 2873 Mary St., Omaha, Nebr.

Filed Oct. 5, 1972, Ser. No. 295,132
Int. Cl. A01i 7/04
U.S. Cl. 168—34 **8 Claims**



A mud clip for a horseshoe is disclosed comprising a base portion having a lug protruding therefrom. The base portion embraces the quarter portion of the horseshoe and is maintained thereon by a horseshoe nail extending through the clip and the horseshoe.

ERRATUM

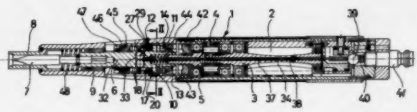
For Class 172—311 see:
Patent No. 3,811,516

3,811,513
PORTABLE PNEUMATIC POWER TOOL

Hans Wezel, Maulbronn/Wuertt, and Manfred Zeller, Pforzheim, both of Germany, assignors to Schmid & Wezel, Maulbronn/Wuertt, Germany

Filed Sept. 27, 1972, Ser. No. 292,631
Claims priority, application Germany, Sept. 30, 1971, 2148739
Int. Cl. B25b 23/14
U.S. Cl. 173—12 **16 Claims**

A pneumatic screwdrive wherein the motor is started by opening a normally closed valve in automatic response to axial shifting of the tool spindle when the tip of the tool is pressed against a screw. The output device of the motor then drives a first coupling portion which drives a second coupling portion rotatably mounted on the tool spindle. The latter receives torque by way of an overload clutch having an annulus of balls mounted in the second clutch portion, a flanged sleeve movable axially of but rotatable with the spindle, a set of pins which are movable axially in a portion of the spindle, and an adjustable spring which determines the maximum torque to be transmitted to the tool spindle. The pins are driven by the balls, be-

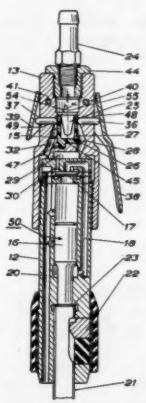


fore the spring yields, to thereby rotate the sleeve. The valve is opened by a pair of spheres mounted in a diametral bore of the tool spindle and displacing a valve actuating rod when the spindle is moved toward the output device. The sleeve of the clutch has two radial bores which receive portions of the spheres to allow the valve to open when the spring yields in response to a predetermined resistance of the spindle to rotation with the output device.

3,811,514
PRESSURE FLUID OPERATED TOOL

Jarl Joel Blomberg, Nacka; Heino Elmessaar, Lidingo, and Karl Gosta Karden, Nacka, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 14, 1972, Ser. No. 289,162
Claims priority, application Sweden, Sept. 17, 1971, 11827/71
Int. Cl. B25d 17/14; E21c 7/00
U.S. Cl. 173—65 **29 Claims**

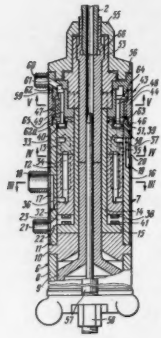


A pneumatic tool has a control valve with a cup-shaped elastomeric valving element disposed in a socket to cover a channel leading from the socket. The forward end of an air inlet forms the socket. The peripheral wall of the elastomeric element can be deformed by means of a radial rod to form between the elastomeric element and the socket a passage from the inlet to the channel.

3,811,515
PERCUSSIVE DRILLING MACHINE

Anatoly Ignatievich Bazhal, ulitsa Franko, 30, kv. 42; Alexandr Ilich Mishkin, ulitsa Gagarina 8, kv. 18, and Anatoly Antonovich Bessarab, ulitsa Shevchenko 8, kv. 24, all of Zheltye Vody Dnepropetrovskoi oblasti, U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,405
Int. Cl. B25d *15/00*
U.S. Cl. 173—93 **5 Claims**



A machine in which an air-operated striking rearhead has a body accommodating a hammer piston reciprocating under the action of compressed air so as to deliver blows at a drill steel located at the front end of the machine, and a reversible rotary impulse fronthead has a body accommodating two rotatable and axially movable annular pistons provided with impact projections and indentations formed between the projections, with the pistons being coupled by an interengagement of the respective projections and indentations thereof, the projections and walls of the fronthead body forming work and idle stroke air chambers which are periodically placed in communication via passages with a source of compressed air and the atmosphere, and the projections of one of the annular pistons performing, under the action of air pressure, high-frequency reciprocatory angular oscillations so as to deliver blows with their impact projections at the respective projections of the other annular piston. The rotary impulse fronthead has a ratchet mechanism which ensures the rotation of one of the annular pistons and the drill steel only in one direction.

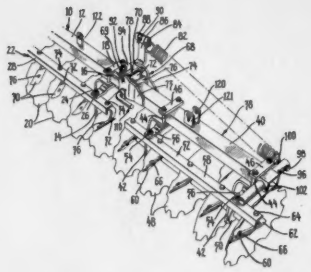
In addition, the rotary fronthead is provided with means adapted to switch over the ratchet mechanism from one rotational direction to the other (from lefthand rotation to righthand rotation, and vice versa) so as to enable right- and lefthand rotation of the drill steel.

3,811,516
FOLDING WING LOCK

Howard G. Thompson, Livonia, and John A. Kay, Jr., Birmingham, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Continuation of Ser. No. 59,281, July 29, 1970, abandoned.
This application Nov. 10, 1972, Ser. No. 306,252
Int. Cl. A01b *49/00*; **E05c** *3/14*
U.S. Cl. 172—311 **5 Claims**

A folding wing lock for a disc harrow including a main gang, a folding wing gang pivotally attached to the main gang by a hinge pin for pivotal movement about the axis of the hinge pin, an aperture through the main gang spaced from and parallel to the pivotal axis between the two gangs, and plates rigidly attached to the folding wing gang which are adjacent to each end of the aperture in the main gang and have apertures that may be aligned with the aperture in the main gang. A locking pin is inserted through the aperture in one of the plates, through the aperture in the main gang and then through the aperture in the other plate. A cam on the locking pin contacts

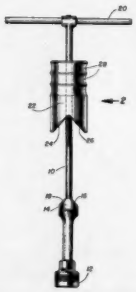


a cam surface on one of the plates and upon rotation of the locking pin, rotates the folding wing gang about the axis of the hinge pin until both ends of the locking pin are securely clamped between the plates and the aperture in the main gang.

3,811,517
IMPACT TURNING TOOL

Joseph Bolger, Summer St., Barre, Mass.

Filed Aug. 28, 1972, Ser. No. 283,910
Int. Cl. B25d *15/00*
U.S. Cl. 173—93.7 **7 Claims**



An impact turning tool comprising a rod, a handle at one end of the rod, a turning implement at the other end thereof, an abutment fixed to said rod adjacent the turning implement, said abutment having a generally V-shaped impact surface which extends away from the turning implement toward the handle; and a weight or impact member slidably and rotatably mounted on said rod, and having a V-shaped surface complementary to the V-shaped surface on the abutment.

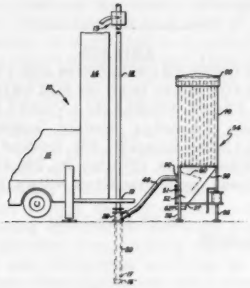
3,811,518
METHOD OF AND APPARATUS FOR COLLECTING CUTTINGS FROM A DRILLED HOLE

Abe M. Kalaf, Silver Bell, and Dominic A. Chiaro, Tucson, both of Ariz., assignors to Bus-Rx, Inc., Tucson, Ariz.

Filed July 24, 1972, Ser. No. 274,624
Int. Cl. E21c *7/02*
U.S. Cl. 175—60 **22 Claims**

An arrangement for collecting a representative sample of all of the cuttings formed by drilling a hole in the earth regardless of whether the hole is wet or dry. The hole is formed by a drilling mechanism that leaves an annulus between the outer

periphery of the drilling mechanism and the periphery of the drilled hole. Compressed air flowing through the drilling



mechanism to the bottom of the hole forces the cuttings up the annulus and through a conduit into a receiver from which the cuttings are collected.

3,811,519

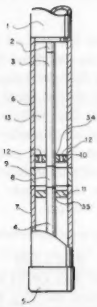
REMOTE CONTROL DIRECTIONAL DRILLING SYSTEM

W. B. Driver, 19 Sheridan Rd., Bridgeton, Mo.

Filed Jan. 4, 1973, Ser. No. 320,901

Int. Cl. E21b *7/04, 9/34*

U.S. Cl. 175—73 **3 Claims**



According to the invention a downhole remote control directional drilling system uses a downhole motor to operate the drill bit and provide power to generate the electrical and hydraulic power used to operate the systems remote control guidance system and direct the drill bit. Also the remote control guidance system is controlled by receiving direction commands radiated down the drill pipe string by electromagnetic waves and the remote control guidance system transmits direction and direction control components of the remote control directional drilling system to the top of the well hole.

3,811,520

TOOL FOR DRILLING HOLES AND CUTTING SLOTS

Shiman Tevelievich Frenkel, p/o Agudzera, 28, kv. 4, Sukhumi; Gely Fomich Skripko, ulitsa Vyshgorodskaya, 33, kv. 13, Kiev; Georg Froimovich Golub, ulitsa Dorogozhitskaya, 28, kv. 87, Kiev; Evgeny Leonidovich Prudnikov, ulitsa Stetsenko 1, kv. 55, Kiev, and Naum Borisovich Ganelin, ulitsa Dorogozhitskaya, 24, kv. 61, Kiev, all of U.S.S.R.

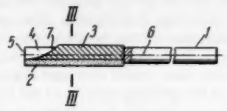
Filed Apr. 24, 1972, Ser. No. 246,798

Claims priority, application U.S.S.R., Apr. 24, 1971, 1646212

Int. Cl. E21b *9/16*

U.S. Cl. 175—398 **3 Claims**

A tool is, disclosed wherein provision is made for a shank and a cutting portion of which the latter is made of an abrasive-containing material. A stem is positioned in the side of the cutting portion along the tool generant which is made of a material less resistant to abrading and having a higher bending



strength than the material of the cutting portion, the profile of the stem being identical to the profile of a longitudinal slot in the end surface of the cutting portion.

3,811,521

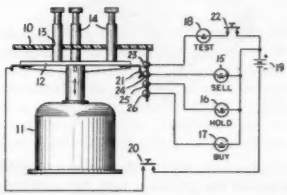
STOCK ANALYZER

Stanley M. Goldman, Plainview, N.Y., assignor to G. M. Stanley & Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 94,680, Dec. 3, 1970, abandoned. This application Nov. 24, 1971, Ser. No. 201,688

Int. Cl. G01g *19/40, 3/14*

U.S. Cl. 177—1 **3 Claims**



A stock analyzer and method of analyzing stock in which variable information with respect to a particular stock is placed into an information storage system in increments, the total is measured, and the total measurement is translated into a "buy" or "sell" reading on an indicator.

3,811,522

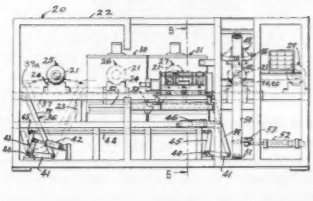
MACHINE FOR WEIGHING, PRINTING AND PUNCHING WORKPIECES

Erich L. Wolf, Riverside, Calif., and William T. Flynn, Perrysburg, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

Filed Apr. 19, 1973, Ser. No. 352,572

Int. Cl. G01g *23/38*; **E41f** *17/00*

U.S. Cl. 177—13 **16 Claims**



A printing and punching machine, which is particularly adaptable for the weighing, printing and punching indicia on artillery shells. The machine includes a loading station, two weighing stations, a printing and punching station and an unloading station. Preferably the stations are equally spaced apart and a walking beam mechanism advances an individual

artillery shell to successive stations after it has initially been manually placed at the loading station. The artillery shell is weighed at the first weighing station and then weighed again at the second weighing station. If the two weights compare, the proper printing pad and the proper punches are automatically actuated in the printing mechanism. The printing and punching mechanism than moves from a home position and is inked by a multiple roller inking mechanism. The printing and punching mechanism then passes over and engages the artillery shell which is in the printing station. At the end of a cycle, the printing mechanism returns to its home position and the walking beam mechanism advances the shell to the unloading station where it is manually unloaded.

3,811,523

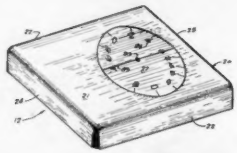
BATHROOM SCALE

Kert Edward Artwick, Morton Grove, and Robert Anthony O'Neil, Glen Ellyn, both of Ill., assignors to Hanson Scale Company, Chicago, Ill.

Filed July 10, 1972, Ser. No. 270,046

Int. Cl. G01g *21/28*

U.S. Cl. 177—180 **10 Claims**



A platform-type bathroom scale having a transparent plastic cover mounted on the platform with the underside painted a desired decorator color except for a circular or other shaped portion with defines a dial-viewing window. The sides of the cover may be draped downwardly over the base of the scale.

3,811,524

GRASS CUTTING OR THE LIKE MACHINES

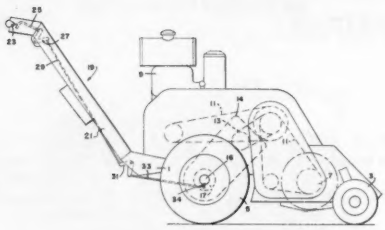
Edward John Aldred, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, Suffolk, England

Filed Feb. 17, 1972, Ser. No. 227,103

Claims priority, application Great Britain, Feb. 17, 1971, 4829/71

Int. Cl. B62d *11/08, 51/04*

U.S. Cl. 180—6.2 **6 Claims**



A power-driven grass cutting or the like machine having an operator's handle formed of an upstanding support and two handle bars which are rotatably mounted on the support. Two driving wheels upon which the machine is supported are each provided with a braking mechanism and the braking mechanisms are coupled to respective handle bars. Steering of the machine is effected by rotating one handle bar to operate the associated braking mechanism. Braking is effected by rotating both handle bars together. A further control is mounted on the handle bars and can be operated whilst steering or braking.

3,811,525

FLUID POWER TRANSMISSION AND CONTROL SYSTEM FOR FLUID MOTORS FOR DRIVING THE FRONT WHEELS OF A VEHICLE

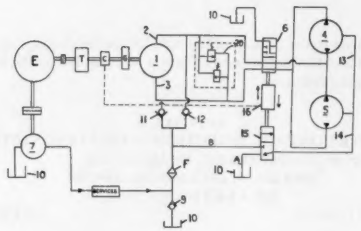
Douglas Stuart, Edinburgh, Scotland, assignor to Carron Hydraulics Limited, Kirkcaldy, Fife, Scotland

Filed May 24, 1972, Ser. No. 256,441

Claims priority, application Great Britain, May 26, 1971, 17115/71

Int. Cl. B60k *17/30*

U.S. Cl. 180—44 M **4 Claims**



The invention provides for a fluid power transmission and control system for fluid motors directly connected to the front wheels of a vehicle such that no reduction gearing is required between the mechanical output members of the fluid motors and the wheels driven by the motors, the rear wheels of the vehicle being driven by mechanical power transmission in known manner. The system also provides for selecting two wheel drive by mechanical transmission or four wheel drive by mechanical transmission to the rear wheels and fluid power transmission to the front wheels.

3,811,526

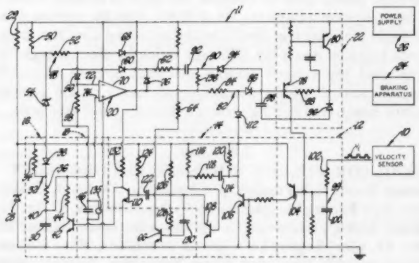
RATE OF CHANGE OF VELOCITY CONTROL SYSTEM

Carmeli Adahan, 1930-Vine No. 303, Berkeley, Calif.

Filed July 20, 1972, Ser. No. 273,679

Int. Cl. B60k *33/00*

U.S. Cl. 180—82 R **40 Claims**



A skid control system for a wheeled vehicle having braking apparatus. By the system, wheel speed is monitored and converted to module input signals having a time spacing corresponding to the velocity of the wheel. These signals are used to control the charge and discharge of a velocity generator capacitor and a velocity reference generator capacitor.

Between input signals a controller will cause the velocity generator capacitor to be charged from a certain threshold value to a peak value corresponding to the instantaneous velocity of the wheel and the velocity reference generator capacitor to be charged from the peak value of the velocity generator capacitor at a rate and to a voltage level corresponding to a desired deceleration rate. Upon the termination of input signal the controller will reset the velocity reference generator capacitor to the peak value of the velocity generator capacitor and the velocity generator capacitor to its threshold value. The voltage levels of the capacitors are compared by an operational amplifier and if the velocity reference generator capacitor has the lower voltage level, which indicates an impending wheel lock condition, an output is developed which through an output signal generator will operate the braking apparatus to relieve the braking force. The system is prevented from operating when the vehicle is stationary and also incorporates provisions for preventing response to minor velocity fluctuations and to wheel velocities below a certain minimum.

3,811,527

AIR-CUSHION VEHICLES

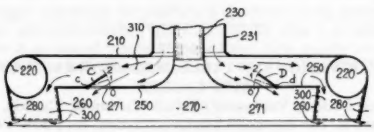
Dominique Pont, Garches; Andre Lafont, Coudoux, and Alain Voisin, Velaux, all of France, assignors to Societe d'Etudes et de Developpement des Aeroglisseurs Marina Terrestres et Amphibies S.E.D.A.M., Paris, France

Filed Dec. 28, 1971, Ser. No. 212,930

Claims priority, application France, Dec. 31, 1970, 70.47521; Dec. 16, 1971, 71.45220

Int. Cl. B60v *1/02*

U.S. Cl. 180—121 **19 Claims**



An air-cushion vehicle including a platform carrying means providing central lift compressed air cushion and peripheral cushions. The supply of compressed air to the central and peripheral cushions is effected through a diffusion space below the platform, the diffusion space being divided into sections, and the air pressure in each section being regulated. Concentration means, in the form of swivelling flaps, adjust the air flow to the various diffusion space sections. The peripheral cushions may be defined by a plurality of annular contiguous skirts, and there may be two groups of such skirts arranged at the front and rear or at port and starboard of the vehicle. The means for concentrating and distributing air pressure among the various diffusion space sections may be controlled by a single lever through a programmed memory system.

3,811,528

VEHICLE MOTOR MOUNTS

Bernard Hooper, Wordsley, near Stourbridge, England, assignor to Norton Villiers Limited, Wolverhampton, Stafford, England

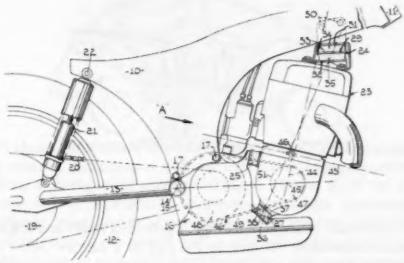
Filed Mar. 29, 1972, Ser. No. 239,186

Claims priority, application Great Britain, Apr. 6, 1971, 8829/71; June 30, 1971, 30545/71

Int. Cl. B60k *5/12*

U.S. Cl. 180—33 A **5 Claims**

This specification describes a motor cycle which includes a frame, a two-cylinder internal-combustion piston engine mounted in the frame, the cylinders of the engine having their longitudinal axes in a common plane containing the rotary axis of the crankshaft which has its crank throws spaced by 180°, a gear box driven by the engine and a driven wheel driven by a final drive from the gear box. The motor cycle has an engine unit which includes the engine, a fork carrying the driven wheel for rotation about a first axis and mounted in a mounting fixed in position relative to the frame for pivotal movement about a second axis, the first and second axes being mutually parallel and parallel to said crankshaft axis, balancing means carried by said crankshaft and which statically balances



between 90 and 110 percent of the rotating mass of the engine only, and mountings between the engine unit and the frame to support the engine unit in the frame so that in operation the engine unit oscillates about an axis of oscillation generally perpendicular to an axial plane containing the longitudinal axes of the cylinders, the mountings being arranged so that they resiliently resist oscillatory movement of the engine about said axis of oscillation.

3,811,529

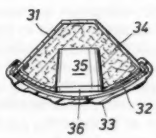
ACOUSTIC LOGGING APPARATUS FOR TRAVEL TIME AND CEMENT BOND LOGGING

Gerald J. B. Crawford, Norwalk, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 26,266, April 7, 1970, Pat. No. 3,712,414. This application Nov. 8, 1972, Ser. No. 304,633

Int. Cl. G01v *1/40*

U.S. Cl. 181—.5 ED **4 Claims**

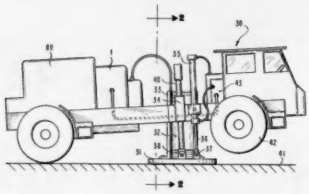


An illustrative embodiment of the present invention includes an acoustic well logging sonde having four articulated arm members disposed at quadrant intervals about a central tubular body member and having an acoustic transmitting transducer disposed on the lower portion of the body member. Two of the diametrically disposed arms carry a pair of acoustic receiving transducers displaced longitudinally from each other while the other two diametrically opposed arms each carry a single acoustic receiving transducer. A switching arrangement is provided for selecting groups of four of the six articulated transducers for making either cement bond log measurements or acoustic travel time measurements.

3,811,530
SOIL-COMPACTION METHOD AND APPARATUS FOR A SEISMIC ENERGY SOURCE TRANSDUCER

Otis A. Johnston, League City, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 5, 1971, Ser. No. 140,389
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 VM **1 Claim**

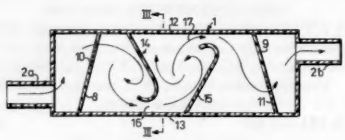


A hydraulic lifting mechanism is provided to lift and lower a seismic transducer relative to the bed of a carrier. After the transducer couples with the ground, a portion of the carrier is raised above ground to apply a predetermined static load to the transducer. Maximum static loading is accomplished by using the lift mechanism to raise one end of the carrier just clear off the ground, regardless of local surface relief. An incremental lift is then automatically added to compensate for soil compaction.

3,811,531
SILENCER

Jan Robert Fleming Forssman, Vallingby, Sweden, assignor to Safety Vehicles Development AB, Stocksund, Sweden

Filed Dec. 5, 1972, Ser. No. 312,317
Claims priority, application Sweden, Dec. 6, 1971, 15632/71
Int. Cl. F01n *1/10*
U.S. Cl. 181—50 **1 Claim**



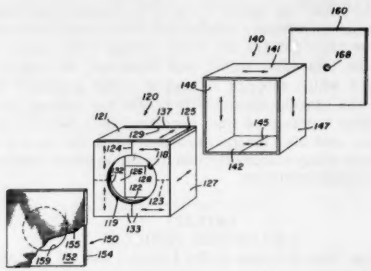
A muffler or silencer, preferably for motor vehicles, adapted to be mounted to the exhaust pipe of an exhaust gas system. The silencer comprises a casing having arranged therein a number of means arranged to impede the passage of a major part of the gas flow and to re-direct said part gas flow rearwardly. Gas through-flow openings are provided at alternate ends of the gas flow re-directing means, between said ends and the casing walls. The arrangement of the through-flow openings is such as to force the gas flow to follow a zig-zag path, and baffle means may be arranged, if desired. The whole device may be made from a heat resistant plastics material.

3,811,532
SOUND REPRODUCTION SYSTEM

Scott F. Everitt, Indianapolis, Ind., assignor to The Indiana National Bank, Indianapolis, Ind.

Division of Ser. No. 222,262, Jan. 31, 1972. This application Feb. 16, 1973, Ser. No. 333,305
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—156 **13 Claims**

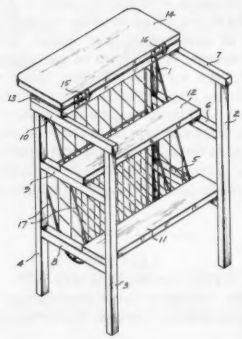
A plurality of generally tubular members of corrugated fiberboard, each rectangular in transverse cross-section and including four panels, are nested one within the other to form a closed six-walled housing, each wall comprising back-to-back panels secured together with the corrugations thereof extending in mutually perpendicular directions, each tubular member being formed of a continuous sheet of fiberboard folded to the tubular configuration and having opposite side edges thereof joined together to form a seam disposed centrally of one of said panels. One form of the invention comprises three tubular members nested together with the axes thereof mutually perpendicular. Another form of the invention comprises two tubular members nested together coaxially, with the inner member having four end flaps at each end thereof disposed in use in a folded configuration wherein opposed flaps are coplanar and joined together to form back-to-back end panels at each end of the tubular member for closing same.



3,811,533
COMBINATION END TABLE, MAGAZINE RACK AND STEP LADDER

Bernice Cocker, Vancouver, British Columbia, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

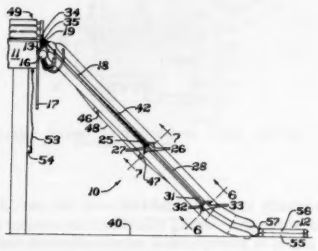
Filed July 21, 1972, Ser. No. 274,109
Int. Cl. A47c *13/00*
U.S. Cl. 182;28 **1 Claim**



Cross members join the legs of each of two pairs of four spaced legs to each other. Step members join the cross members to each other. The step members include an uppermost step member joining the uppermost cross members to each other. A table member is hingedly affixed to the uppermost step member in a manner whereby the table member is positionable in substantially coplanar relation with the uppermost step member on the uppermost cross members to provide a table top and is positionable in substantially juxtaposed rela-

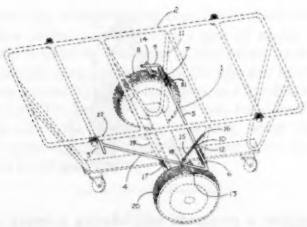
tion with the table member resting on the uppermost step member and providing the uppermost step of a step ladder including the other step members. A magazine rack is mounted under the step members.

3,811,534
ESCAPE SLIDE ASSEMBLY
John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.
Filed July 24, 1972, Ser. No. 274,500
U.S. Cl. 182—48 **9 Claims**



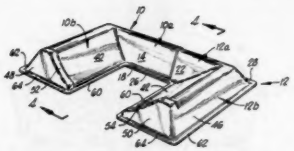
An escape slide assembly having a long inflatable ramp which is inflated from the folded condition to an extended condition for evacuating people from an elevated platform to a lower surface. The slide is hinged to the platform for swinging movement about a horizontal axis and upper and lower guy straps attached to both sides of the slide are connected to outrigger tripods on the platform at positions on the horizontal hinge axis and laterally spaced from the slide providing resistance to lateral displacement of the slide during inflation and after it is fully extended.

3,811,535
VEHICLE BRAKE
Joe R. Preusser, 160 N. Collingsworth, El Paso, Tex.
Filed Feb. 23, 1973, Ser. No. 335,130
Int. Cl. B60t *1/04*
U.S. Cl. 188—29 **6 Claims**



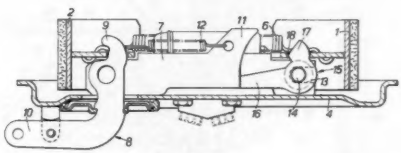
A parking brake is described for use on materials handling vehicles or other small carts. The brake comprises an engagement lever for mechanically engaging the brake shoes against the vehicle's wheels. The lever is mounted on the side of the vehicle with a handle at one end and is connected at its other end at right angles to an axis which is generally parallel to the axle on which the wheels of the vehicle turn and runs through bearing means which are attachable to the base of the vehicle. Stops located on the axis engage the bearing means and prevent excessive lateral movement of the device. The brake shoes are, respectively, mounted directly on the engagement lever and a shorter lever connected at right angles to the opposite end of the axle. Means are also provided for latching the engagement lever with the shoes either engaging the vehicle wheels or out of contact with the wheels.

3,811,536
CHOCK
Freddie J. Haynes, 3612 Meadowbrook, Midwest City, Okla.
Filed July 24, 1972, Ser. No. 274,176
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **11 Claims**



A chock for aircraft or other vehicles having ground engaging wheels, including a pair of adjustably engaging chock halves defining a generally U-shaped chock. Each of the chock halves is made of a strong, relatively lightweight synthetic resin, and is of generally triangular cross sectional configuration. Each chock half is of L-shaped configuration and includes an arm configured to register with a corresponding arm of the other chock half when the chock halves are slidably engaged. A securing member is provided for locking the two halves of the chock in a selected position when the chock is in position for brakingly engaging the opposite sides of a tire or wheel.

3,811,537
SHOE DRUM BRAKES
Hugh Grenville Margetts, Leamington Spa, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed Sept. 22, 1972, Ser. No. 291,170
Claims priority, application Great Britain, Aug. 23, 1971, 44500/71; July 29, 1972, 35551/72
Int. Cl. F16d *65/54*
U.S. Cl. 188—79.5 P **6 Claims**

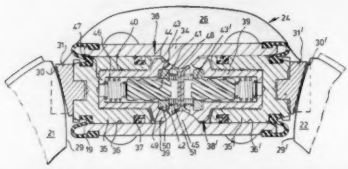


One part of a two-part strut of adjustable length extending between arcuate shoes of a shoe-drum brake adjacent to their actuated ends is formed by a bell-crank lever which is pivotally mounted in the other part, and one arm of the lever is engaged in a slot of limited length in a shoe web while the second arm co-operates with a toothed element rigid with said other part.

3,811,538
BRAKE ADJUSTERS
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Birmingham, England
Filed Mar. 19, 1973, Ser. No. 342,359
Claims priority, application Great Britain, Mar. 23, 1972, 13563/72
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 GE **21 Claims**

A slack adjuster for a drum or disc brake has a housing, preferably in the form of a cylinder body; a first member, preferably a hydraulic piston, slidable in the housing and a second or strut member normally resting against a stop in the

housing. A non-reversible screw-threaded connection between the first and second members comprises an internal thread on the former and an external thread on the latter. The adjuster includes a screw member fixed relative to the housing and a drive ring member. A reversible screw-thread connection is formed by an external thread on the screw member and an internal thread on the drive ring member. Mating clutch surfaces are provided on the second member and the drive



ring and are normally urged towards one another. The normal brake slack is accommodated by axial clearance, preferably at the reversible screw-thread connection. When lining wear has taken place the axial clearance is taken up and slight rotation occurs at the reversible screw-thread. Upon brake release, slight rotation occurs in the opposite direction and this is transmitted to the non-reversible screw-thread connection via the clutch surfaces.

3,811,539

INTERNAL SHOE-DRUM BRAKES

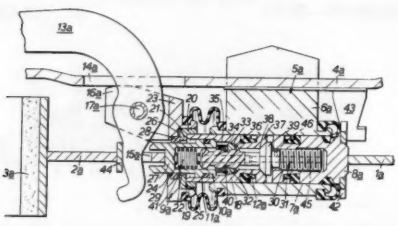
Glyn Phillip Reginald Farr, Kenilworth, England, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Nov. 6, 1972, Ser. No. 303,929

Claims priority, application Great Britain, Nov. 12, 1971, 52569/71

Int. Cl. F16d 65/16

U.S. Cl. 188—106 A **14 Claims**



In an internal shoe-drum brake a first and second pair of pistons working in a double ended hydraulic cylinder act to separate the shoes for normal service braking. A lever acting on one shoe is pivotally connected to a third piston which is interposed between the first and second pistons and acts on the other shoe through the second piston when the lever is moved angularly in a brake applying direction about its pivotal connection with the third piston.

3,811,540

SELF-ADJUSTING DEVICE FOR DISC BRAKES

Wilhelm Knapp, Banngarten, and Siegfried Ohmayer, Odenwaldring, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

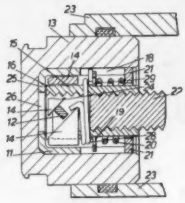
Filed Sept. 22, 1972, Ser. No. 290,283

Claims priority, application Germany, Oct. 11, 1971, 2150636

Int. Cl. F16d 65/56

U.S. Cl. 188—196 D **15 Claims**

There is disclosed a self-adjusting device for the brake lining clearance of a hydraulically actuated spot-type disc brake having a cup-shaped actuating piston. The piston is contained in the hydraulically actuated brake cylinder. A spring housing is inserted into the piston and is resiliently clamped in position therein by the interior surface of the piston. A threaded adjusting spindle and an adjusting nut threaded onto the spindle in a self-locking manner are disposed coaxially within the housing. An engaging element having an inclined ramp is disposed coaxially about the nut and which upon adjustment is



in a torsionally locked connection with the nut. A spring is disposed within the housing coaxial of the exterior surface of the nut and is in a cooperative relationship with the engaging element. A post is fixed to the inner surface of the housing and cooperates with the ramp to enable the desired adjustment. The desired clearance between the disc of the disc brake and the brake lining is provided by the cooperating threads of the spindle and the nut.

3,811,541

APPARATUS FOR ATTACHING A CENTER PULL TYPE BRAKE TO A BICYCLE

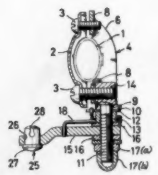
Junihiko Yoshikawa, Soka, Japan, assignor to Kabushiki Kaisha Yoshikawa Seisakusho, Tokyo, Japan

Filed Aug. 7, 1972, Ser. No. 278,704

Claims priority, application Japan, Mar. 31, 1972, 47-37242; Mar. 31, 1972, 47-37243

Int. Cl. B62l 1/14

U.S. Cl. 188—206 R **5 Claims**



To support a pivotable rod, bearing a brake shoe, on a branch of the front fork of a bicycle, a clamp is provided consisting of two parts, one of which is formed of bent sheet metal especially shaped to hold a bolt on which said pivotal rod is supported.

3,811,542

BAND BRAKE AND METHOD FOR MAKING SAME

Oscar Hamrick, Elmwood, and Orville E. Kessinger, Jr., Mackinaw, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

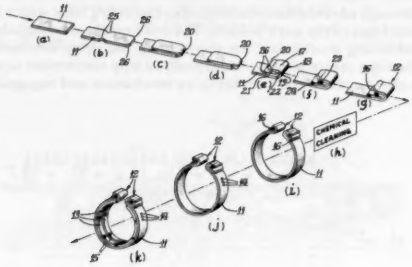
Filed Nov. 6, 1972, Ser. No. 304,083

Int. Cl. F16d 69/00

U.S. Cl. 188—259 **5 Claims**

A band brake comprises a one piece flexible band having an anchor formed on each end thereof by reverse folding integral

extensions of the band. The band is stretch-formed to its desired diameter on a like configured die member and a segmented brake lining is secured to inner surface portions thereof.

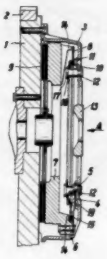


3,811,543
GARMENT BAG
Maxime Parrochia, Frontonas, Isere, France
Filed Oct. 3, 1972, Ser. No. 294,550
Int. Cl. B65d *3/00*
U.S. Cl. 190—43 **5 Claims**

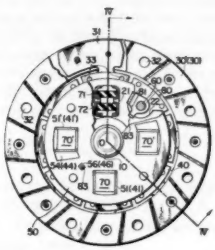
A garment bag of the folding type is provided with a flat, hollow, open ended cover, having a pair of major side surfaces. A grip is fixed to each end of the cover, each grip extending along the entire periphery of the end and having a pair of outwardly extending, oppositely disposed handles integrally formed therein. The grips at each end may be locked together in order to close the respective end and, when the bag is folded, the grips of one end may be locked to the grip of the other end to facilitate carrying.

3,811,544
CLUTCH WITH SPRING LOADED OPERATOR FULCRUM
Paul Maucher, Neuweier, Germany, assignor to Luk Lamellen- und Kupplungsbau GmbH, Buhl, Baden, Germany
Continuation of Ser. No. 838,611, July 2, 1969, abandoned.
This application Oct. 8, 1971, Ser. No. 187,868
Int. Cl. F16d *13/44*
U.S. Cl. 192—89 B **10 Claims**

Friction clutch includes a flywheel and a cover fastened thereto and having a wall portion spaced therefrom, a pressure plate disposed in the space between the flywheel and the wall portion and connected to the cover, a rotatable entrainment disc mounted in the space, a clutch plate spring disposed between a pair of annular seats and forming therewith and with the cover a unitary structure, the clutch plate spring being swingably mounted, and spring-loaded means for supporting the seat located on one side of the clutch plate spring, the pressure plate being engageable by the clutch plate spring so as to be axially displaced toward the entrainment disc and the flywheel.



3,811,545
CLUTCH DISC WITH FRICTION AND RESILIENT DAMPERS
Kiyoomi Sato, and Takashi Ishidera, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed Feb. 15, 1972, Ser. No. 226,621
Claims priority, application Japan, Feb. 19, 1971, 46-7829
Int. Cl. F16d *3/14*
U.S. Cl. 192—106.1 **1 Claim**

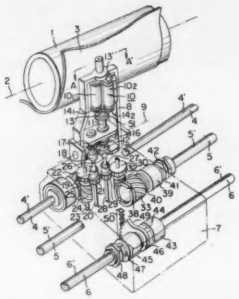


In a friction clutch disc having damper members for resiliently connecting a driving member and a driven member, a means for changing the friction between said two members in accordance with the relative torsional displacement between said two members.

3,811,546
MECHANICAL PRINTER
Takami Suzuki, Fujisawa, and Koh Matsuhisa, Ninomiyamachi, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 247,946
Claims priority, application Japan, Apr. 30, 1971, 46-28781
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **4 Claims**

A mechanical printer with a plurality of typing wheels which are pivotable separately from the carrier is provided in which an outer shaft which causes the typing wheels to revolve in unison around the axis thereof and an inner shaft which causes

rotations of the typing wheels on their own axes are coupled to driving shafts through universal joints to permit the separate



pivoting, and at least one driving shaft is provided with an Oldham's coupling obviating the need for strict alignment of the driving shafts.

3,811,547

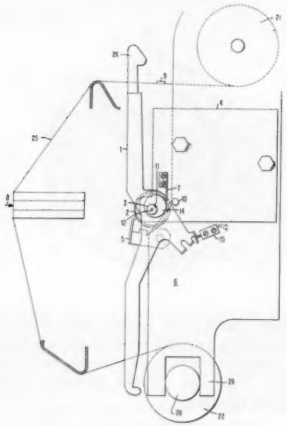
CYCLICALLY ROTATABLE ECCENTRIC PIVOT FOR RIBBON REVERSE LEVER

Donald William Brearley, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,264

Int. Cl. B41j *33/44*

U.S. Cl. 197—165 **2 Claims**



An eccentric mounting for a ribbon reverse lever which provides a different portion of the ribbon at the print position each time the ribbon reverses its winding direction.

3,811,548

STOP MOTION CONVERTER

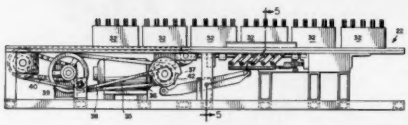
Frederick R. Neff, 2993 Curtis Ave., Des Plaines, Ill.

Filed Sept. 5, 1972, Ser. No. 286,014

Int. Cl. B23q *5/22*

U.S. Cl. 198—19 **4 Claims**

There is provided a stop motion conveyer for advancing a series of work holders in step-by-step relation to a work station from a continuous supply of work holders, each of the work holders having a plurality of work positions sequentially alignable at the work station. The conveyer includes a table supporting the work holders through their movement past the work station. A drive mechanism is provided reciprocable through advance and return strokes and engageable with a forward one of the work holders. The drive mechanism includes a retracting mechanism for disengaging the drive mechanism during a return stroke. Additionally, a stop mechanism is provided synchronized with the drive mechanism and engageable



with the next one of the work holders for retarding the advancement thereof until the drive mechanism has advanced the forward one of the work holders out of the path of travel of the next one of the work holders. Thus, the second and subsequent work holders are biased in abutting relation toward the work station, and the stop means retards the forward movement of the second and subsequent work holders and prevents them from running into and dislocating the forward one of the work holders as it passes through the work station.

3,811,549

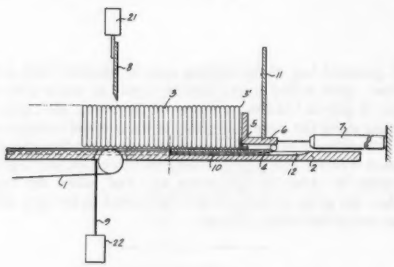
APPARATUS FOR HANDLING A FLOW OF BOXES

Roland Preisig, Yens, Switzerland, assignor to J. Bobst & Fils SA

Filed May 10, 1973, Ser. No. 358,959

Int. Cl. B65g *47/00*

U.S. Cl. 198—21 **7 Claims**

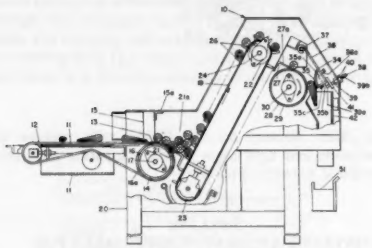


An apparatus for handling a plurality of articles, such as folded or collapsed boxes, which are received as a flow of articles moving in one direction from a conveyor device, characterized by a table arranged to receive the articles from an end of the conveyor device and having a pair of slots in a surface thereof, a pair of skates or skids received in the parallel slots and displaceable therealong for receiving the articles as they are deposited onto the table to transport the article across the table out of contact with the surface of the table. The device further includes a moveable stop which engages the skate combination and urges them in a direction toward the conveyor device and a brake device acting on the moveable stop to control the movement of the skate and flow of boxes across the table.

3,811,550
APPARATUS FOR ORIENTING TAPERED ARTICLES

Fortunato S. Ajero, South Milwaukee, Wis., assignor to Hughes Co., Inc., Columbus, Ohio

Filed Aug. 14, 1972, Ser. No. 280,335
Int. Cl. B65g 47/24
U.S. Cl. 198—272 **15 Claims**

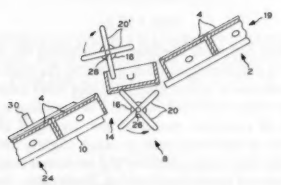


Apparatus for orienting tapered articles, having a horizontal rotating cylinder, a conveyor for individually depositing randomly oriented tapered articles on the outer surface of the cylinder, and a moveable traction plate adjacent to the descending side of the cylinder outer surface for pinching the larger end of each tapered article against the descending cylinder surface while permitting the smaller end of the article to gravitate downwardly between the surface and the plate at a faster rate of speed than that of the descending surface to orient the article smaller-end-first as it is released downwardly from between the descending surface and the plate.

3,811,551
APPARATUS AND METHOD FOR ORIENTING ARTICLES

William R. Eddy, c/o Phillys Petroleum, Kansas City, Mo.

Filed Jan. 15, 1973, Ser. No. 323,790
Int. Cl. B65g 47/24
U.S. Cl. 198—288 **9 Claims**



A method and apparatus for orienting articles having a concave side and a convex side by ejecting unoriented articles from a feedstream of said articles.

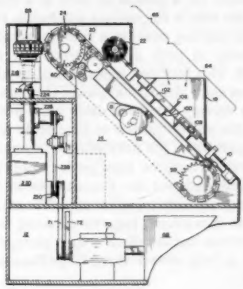
3,811,552
CAPSULE INSPECTION APPARATUS AND METHOD

William D. Wagers, Jr.; Willard J. Vandenberg, both of Indianapolis; Robert L. Bollman, Mooresville; Robert E. Ramsey, Indianapolis; Daniel G. Swisher, Indianapolis, and John E. Taylor, Jr., Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 105,262, Jan. 11, 1971. This application Jan. 31, 1973, Ser. No. 328,454
Int. Cl. B65g 47/24
U.S. Cl. 198—253 **9 Claims**

Apparatus for handling medicinal capsules at high rates, e.g., 900 per minute, to present them in succession, in uniform orientation, at an inspection position and there spin them on their axes to expose their entire surfaces for inspection as by optical means. Bulk capsules are loaded from a hopper into the cavities of a chain conveyor running up an incline. A pair of spaced rolls define a feed slot from the hopper to the conveyor along the line of cavity travel. The rolls rotate outward to move misaligned capsules away, induced air flow urges aligned capsules through the slot and into the cavities, and an agitator bar dislodges capsules from double-filled cavities.

To rectify body-forward capsules to cap-forward position, each cavity has a bottom slot between side ribs, which will pass the body but retain the cap of the capsule. As the cavity moves off the end of a capsule-supporting rail, a forward capsule body is swung downward by gravity and induced airflow



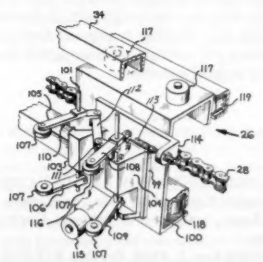
through the slot to tilt the capsule to an upright position. A brush then tilts the upright capsule forward, and a camming belt moves it to a cap-forward position in its cavity.

Pick-up transfer fingers in the upper conveyor sprocket wheel are advanced through the cavities to lift the capsules therefrom on suction seats and transfer them to an inspection head at a loading station. The inspection head has a ring of parallel rolls, each pair of which forms a groove in which a capsule is retained by air flow. The head indexes to carry capsules from the loading station to an inspection station where rotation of the rolls spins each capsule on its axis to expose its entire surface for optical inspection. The capsules are discharged at a reject or accept station, depending on the inspection result.

3,811,553
PHASE COMPENSATED MULTIPLE MOVING HEAD INSPECTION APPARATUS

Darius O. Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 209,144, Dec. 17, 1971. This application May 11, 1973, Ser. No. 359,247
Int. Cl. B65g 47/24
U.S. Cl. 198—283 **3 Claims**



Apparatus and method for driving three article inspection stations out of phase with one another for inspecting moving

articles with a minimum expenditure of drive power. In this invention, three inspection station drive mechanisms are utilized. Each of the three drive mechanisms is an identical unit utilizing a cam to produce an oscillating output from an arm, the cam being driven by a continuously rotating input shaft. Each of the three units are coupled in series in a linear array and driven by a common drive motor. A split coupling is used to connect the three drive units together, allowing the phase of the cams contained within the unit to be set independently. The oscillating arms are set out of phase with each other by approximately 120°. The oscillating output arms drive article inspection stations on which are mounted inspection apparatus. The motion of the article inspection stations is such that, as articles are precessed past each station, the station tracks the article for a period of time at a constant velocity and inspects the article for various attributes, the station then returning to its starting point at a velocity greater than the inspecting velocity to pick up and track the next container presented to it. This function is performed by all three inspection stations on each article that passes through the inspection apparatus. By driving the three drive units out of phase with one another, the power needed to accelerate one unit may be furnished, in part, from the deceleration of another unit in the series drive train. Thus, the total power required to drive the apparatus is reduced and the fluctuations within the system caused by relatively high transfers of power from acceleration to deceleration is reduced, thereby allowing the operation of the system without the use of an energy storage element, such as a flywheel, to help absorb these large fluctuations in power requirements.

3,811,554

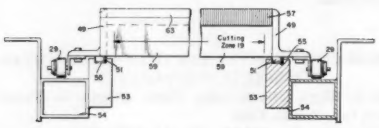
WORKING SURFACE FOR RADIANT ENERGY BEAM CUTTER

Georgette S. Egan, Granada Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Substitute for Ser. No. 176,497, Aug. 31, 1971, abandoned. This application Jan. 19, 1972, Ser. No. 218,896

Int. Cl. B65g *17/06*

U.S. Cl. 198—131 **3 Claims**



A cutting surface for a laser cutter is formed of a plurality of slats assembled into an endless conveyor belt, or alternatively into a slidable tray, for carrying material toward and away from the cutting area. In order to prevent damaging reflection of the laser beam the slats have a honeycomb core held rigid by knife-edged support members.

3,811,555

DIVIDER MECHANISM FOR ARTICLE CONVEYORS

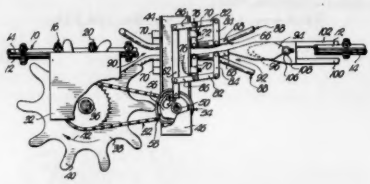
Donald J. Scheier, Kansas City, Mo., and James A. Bonuchi, Merriam, Kans., assignors to Johnson Gordon Company, Kansas, Mo.

Filed Apr. 1, 1969, Ser. No. 812,072

Int. Cl. B65g *17/20*

U.S. Cl. 198—177 **13 Claims**

Articles hanging from a conveyor are deflected out of their normal path of advancement by swingable fingers actuated by the article supporting units. The arrangement is such as to deflect one of any number of units while those not deflected



continue their normal course. Guide rails receive the deflected units and hold them within a separate path for a predetermined distance of travel.

3,811,556

CONVEYOR APPARATUS, ESPECIALLY FOR SECTIONAL STEEL

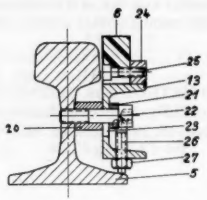
Gerhard Kaiser, Metzingen, and Gerhard Faiss, Reutlingen, both of Germany, assignors to Gustav Wagner Maschinenfabrik, Reutlingen, Germany

Filed Aug. 2, 1972, Ser. No. 277,297

Claims priority, application Germany, Dec. 16, 1971, 2162605

Int. Cl. B65g *15/60*

U.S. Cl. 198—204 **8 Claims**



The present conveyor apparatus is adapted for moving sectional steel to machining stations whereby the sectional steel is carried by means of roller chains across steel rails of a cross conveyor to main conveyor means. For avoiding a screeching noise, bars of synthetic material are arranged alongside at least one side of said steel rails to reach slightly above the top surface of the steel rails whereby the sectional steel may slide along said bars of synthetic material. Preferably, the synthetic material bars are adjustable in their elevational position relative to the respective rail to compensate for wear and tear.

3,811,557

SIDE STRIPPER FOR RAVELING GRATE CONVEYOR

Walter J. Hartwig, Hartland, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

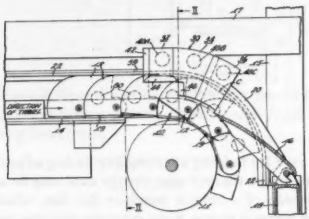
Filed Mar. 26, 1973, Ser. No. 345,231

Int. Cl. B65g *45/00*

U.S. Cl. 198—230 **20 Claims**

An assembly for scraping and sealing the inner surface of the side wall of a traveling grate conveyor contiguous the discharge end of the upper run of the conveyor. A similar assembly is provided for each of the opposite side walls of the grate conveyor. The assembly comprises a plurality of hollow fluid-cooled plows which are positioned in abutting relation to each other lengthwise of the conveyor and contiguous the inner surface of the conveyor side wall at a location in the region where the conveyor strand is about to turn, or has started to turn, about the head shaft at the discharge end of the con-

veyor. At least one of the plows is provided with a scraping edge which deflects the conveyed material from adjacent the inner surface of the corresponding side wall of the conveyor to a position laterally inwardly of the side wall. The plows also serve to close the clearance space between the sealing plate and the upper edge of the conveyor side plates (a plurality of pivotally connected side plates define the side wall) in the region where the conveyor strand turns, whereby to prevent lateral spillage of material being conveyed, such as ore pellets, through this clearance space. Each of the plows which constitute the scraping and sealing assembly is rigidly connected to a cooling fluid (air) supply pipe which is mounted for axial movement in a direction laterally of the conveyor strand. The



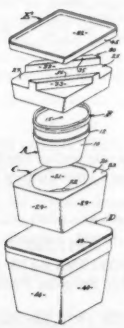
cooling fluid is circulated through the hollow interior of the plows. The plurality of air supply pipes also are rigidly connected to a guide plate lying laterally outwardly of the conveyor side plates. The relation between the plow members, the conveyor side plates, and the guide plate provides a "follower" arrangement whereby lateral expansion or contraction of the conveyor strand causes corresponding movement of the air supply pipe members and hence of the plows and guide plate attached to the air supply pipe members. This follower movement insures that the plows are maintained in proper scraping and sealing relation at all times to the inner surface of the conveyor side wall, while at all times maintaining a predetermined working clearance of the conveyor side plates relative to the guide member and relative to the plows.

3,811,558

CONDITIONED FOOD TRANSPORT CONTAINER

Robert L. Burk, 417 S. Lucerne Blvd., Los Angeles, Calif.

Filed July 21, 1972, Ser. No. 273,970
Int. Cl. A45c *11/20*
U.S. Cl. 206—4 **3 Claims**



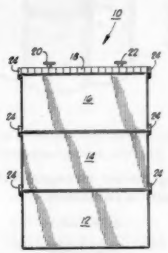
A container for the transport of a serving of food at the temperature condition required therefor, together with supplements to be added thereto according to taste, and compartmented so as to accommodate utensils appropriate to be used in consuming the contained food. Sanitation and cleanliness is of prime concern, the container being characterized by replaceably expendible components, each serving its particular function and cooperatively related so as to maintain the food in its optimum prepared condition for appetizing exposure to the consumer.

3,811,559

PICNIC ACCESSORIES

John A. Carter, 143 W. Riekenhaeker, Midwest City, Okla.

Filed Aug. 17, 1972, Ser. No. 281,308
Int. Cl. A45c *11/20*; B65d *21/02*
U.S. Cl. 206—4 **8 Claims**



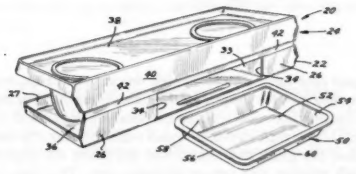
An apparatus for unitary assembly to carry diverse picnic supplies, such apparatus being light in weight while having desirable insulative and other functional attributes. The apparatus consists of a stackable series of insulated containers which are light in weight, individually insulative, and individually adapted for specific storage or utilitarian function. Individual modular containers of the unit may include such as a charcoal grill section, cold food storage section, dry food storage and still other specifically designated compartments.

3,811,560

CLOSABLE DINNER SERVICE

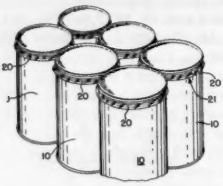
Paul K. Schilling, and Thomas H. Eckdahl, both of St. Paul, Minn., assignors to Plastics, Inc., St. Paul, Minn.

Filed Oct. 27, 1972, Ser. No. 301,471
Int. Cl. A45c *11/20*; B65d *21/02*
U.S. Cl. 206—4 **10 Claims**



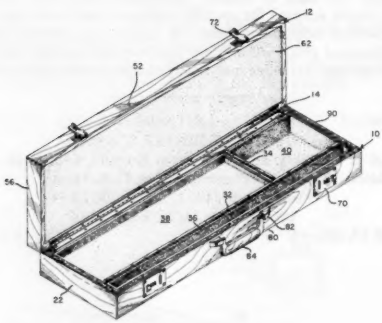
A closable dinner service device including a case having a body and a cover adapted to close said body and be opened relative to said body and in open position forming a serving tray, an opening formed in a wall of said body through which a food tray is inserted when the device is closed, the opening being closed by a side wall of the cover when the device is opened into tray formation, the side wall of the body and the side wall of the cover being hinged and an insert tray adapted to be received in the cover in overlying relation to the food tray with the cover closed upon the body, the service providing a substantially rigid tray when in opened extended condition.

3,811,561
CONTAINER CARRIER
Ouglesa Jules Poupitch, Lojolla, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation of Ser. No. 131,625, April 6, 1971, Pat. No. 3,713,684. This application Aug. 31, 1972, Ser. No. 285,280
Int. Cl. B65d *85/62*
U.S. Cl. 206—161 **3 Claims**



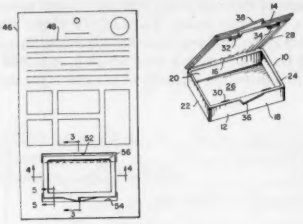
Formed wire ring carrier arrangements for retaining and transporting a plurality of containers.

3,811,562
GUN CASE
Samuel Smith, 3105 June St., Lake Charles, La.
Filed Mar. 29, 1972, Ser. No. 239,150
Int. Cl. B65d *85/54*
U.S. Cl. 206—317 **1 Claim**



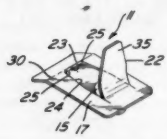
A gun case having an elongated rectangular shape including a base and a cover hinged to the base, both parts being made from marine plywood with an external layer of sheet Formica material. The various side and end walls forming the cover and the base are glued together while the joints are also secured through mortise and tenon arrangements. The base is partitioned into a first elongated compartment extending between the ends thereof for receiving the barrel of a gun, a second elongated compartment wider than the first for receiving the stock of the gun, and a third compartment for receiving other parts such as trigger mechanism or shells, etc. Foam padding is provided on the inside of the cover and in the compartment which receives the stock for ensuring that the latter is properly held in the case against movement when the cover is closed. A cloth lining of acrylic pile covers the interior of the case, and a felt strip is placed on the edges of the base to engage the edge of the cover when closed. An aluminum handle is provided on the front side of the base and combination latch and lock mechanisms are provided for releasably securing the cover to the base.

3,811,563
PACKAGE STRUCTURE
William L. Fox, II, 35785 Restmore, Mt. Clemens, Mich.
Filed July 3, 1972, Ser. No. 268,649
Int. Cl. B65d *43/10, 43/16, 73/00*
U.S. Cl. 206—459 **6 Claims**



A key case for holding a second key having adhesive material on one surface thereof whereby the case may be attached to the underside of a vehicle hood or the like, which case includes an integral plastic hinge between the box and cover of the case and locking means between the other side of the box and cover whereby the cover is held in spaced apart relation with respect to the box on closing of the case, in conjunction with a display card for the case including a pair of parallel slots therein through which the hinge and locking means extend, with the cover on one side of the card and the box on the other side of the card.

3,811,564
CONTAINER CONSTRUCTION
Robert J. Braber, Harleysville, Pa., assignor to The Lehigh Press, Inc., Harleysville, Pa.
Filed July 12, 1972, Ser. No. 270,945
Int. Cl. B65d *73/00, 83/04*
U.S. Cl. 206—469 **6 Claims**



A container wherein one wall is flexible and formed with a score adapted to fracture upon flexure to provide an opening into the container.

3,811,565
REINFORCING BAND STRIP
Andrew J. Tancredi, c/o Surprise Plastic Inc., 124 57th St., Brooklyn, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,515
Int. Cl. B65d *25/00, 73/00*
U.S. Cl. 206—478 **5 Claims**

An improved reinforcing band strip including opposed ends. A groove is located at each end and inwardly of each groove is an opening. In one embodiment a slot extends from the base of each groove to the adjacent opening. In a further embodiment

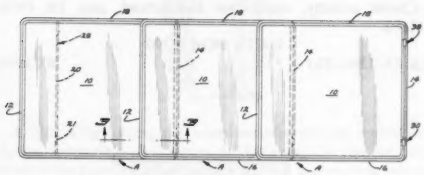
a slot extends from the lengthwise edge of the reinforcing band strip to each opening. Still further, transversely disposed

inwardly directed fingers can be provided at the end of each groove to prevent a tape passing therethrough from inadvertently slipping therefrom.

3,811,566
TRAY

Robert F. Bateman, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Jan. 24, 1972, Ser. No. 220,229
Int. Cl. B65d *21/04*
U.S. Cl. 206—509 **1 Claim**



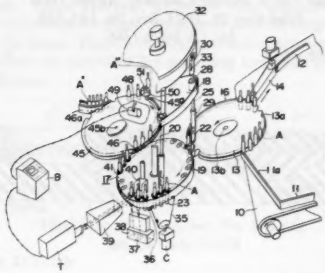
A tray arrangeable and engageable with an identical tray in partially overlapping relation with a portion of the bottom of the underlying tray exposed which includes a bottom having notch means formed on the undersurface thereof and spaced from one end thereof together with upstanding lug means formed on the top surface of the bottom at the opposite end thereof for engagement with the notch means on the bottom of a tray placed partially on the top of the tray.

3,811,567
APPARATUS FOR INSEPCTION OF AMPOULES

Akio Tomita, Tsuneyoshi; Tadakazu Karitani, Hyogo, and Takashi Ohtsuki, Osaka, all of Japan, assignors to Takeda Chemical Industries, Inc., Osaka, Japan

Filed Dec. 18, 1972, Ser. No. 315,827
Claims priority, application Japan, Dec. 22, 1971, 46-104997
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **5 Claims**

An apparatus for inspection of ampoules wherein ampoules to be inspected are positioned in alignment with a plurality of pairs of holders having inwardly tapering portions, into and by which the shoulder or bottom portions of ampoules are inserted and held, and rotated by the holders without there being any shaking or other movement to cause formation of bubbles in the liquid in the ampoules, and any foreign bodies in the ampoules are illuminated by a source of light without there being reflection of light from other ampoules with the

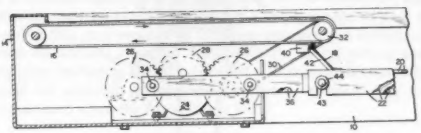


result that inspection of ampoules can be carried out accurately, and without misinterpretation, directly by an operator or by a television camera.

3,811,568
PARTS SEPARATORS

Irving T. Pearson, Sterling, Mass., assignor to Nelmor Co. Inc., Worchester, Mass.

Filed Dec. 13, 1972, Ser. No. 314,853
Int. Cl. B07b *1/12*
U.S. Cl. 209—99 **4 Claims**



A machine for separating plastic parts from runners comprising a conveyor section carrying the parts from the mold to a separating section. The separating section comprises elongated rods alternating with parallel orbitally movable bars, the bars lifting and conveying runners to the end of the machine and the parts falling between the rods and the bars into a collecting box.

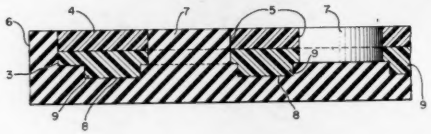
3,811,569
FLOTATION RECOVERY OF MOLYBDENITE

Joseph Floyd Shirley, Tucson, Ariz.; Edward Frank Caropreso, Hightstown, N.J., and George Lamar Fraser, Magna, Utah, assignors to FMC Corporation, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,773
Int. Cl. B03d *1/06*
U.S. Cl. 209—167 **14 Claims**

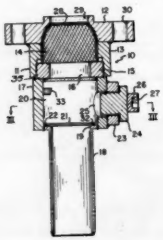
A process for separating molybdenite from copper concentrates containing copper and iron sulfides, gangue materials and an organic collector comprising (1) conditioning the concentrate in aqueous suspension at a pH below about 7 with a soluble metal salt; (2) contacting the so treated concentrate with hydrogen peroxide at pH of about 4 to about 8; (3) subjecting the concentrate from (2) to a soluble iron cyanide and/or a solution of phosphorus pentasulfide in sodium hydroxide while maintaining the pH at no higher than about 8.5 whereby the molybdenite is floated and (4) recovering the enriched molybdenite float.

3,811,570
POLYURETHANE SCREEN WITH BACKING MEMBER
Thomas Holding, Canton; Robert C. Schisler, Akron, and John M. Sawyer, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 20, 1971, Ser. No. 145,358
Int. Cl. B07b *1/46*
U.S. Cl. 209—399 6 Claims



An improved shaker screen having openings therein for the size particles desired, comprising a plastic or hard elastomeric member and a facing member of a polyurethane elastomer having a Shore A hardness of 30 to 90.

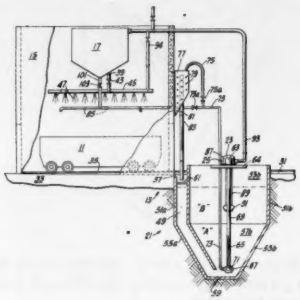
3,811,571
PUMP FILTERS
James F. Woods, Craigsville, and Gary Paul Kerns, Fenwick, both of W. Va., assignors to Standard Hydraulics Service, Inc., Craigsville, W. Va.
Filed July 3, 1972, Ser. No. 268,684
Int. Cl. B01d *35/02*
U.S. Cl. 210—136 5 Claims



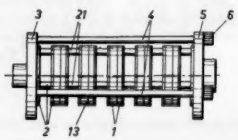
A pump filter comprises a housing having two independent chambers in communication with each other. The chambers are vertically spaced with the upper chamber being further defined by a mounting plate and the lower chamber communicating with a suction tube. A filter screen is positioned in the upper chamber and the lower chamber includes a swing valve which opens and closes the mouth of the suction tube. A removable plug communicates with the second chamber to permit access thereto.

3,811,572
POLLUTION CONTROL SYSTEM
Benjamin F. Tatterson, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Continuation of Ser. No. 27,487, April 13, 1970, abandoned.
This application Jan. 17, 1973, Ser. No. 324,436
Int. Cl. B01d *21/00*
U.S. Cl. 210—152 3 Claims

A system for controlling pollutants from the quenching station of a coke oven is provided. The system includes a coke breeze sump that is divided into two zones, a coke breeze settling zone and a clean liquid zone. A first pumping means withdraws a thickened sludge of coke breeze, either continuously or intermittently, from the coke breeze settling zone and a second pumping means flows clean liquid from the clean liquid zone to a spray means. The spray means directs the clean liquid onto hot incandescent coke in a quenching car thereby producing quenched coke and a slurry of coke breeze and of liquid. This slurry drains into the coke breeze settling zone of the sump where the coke breeze settles by gravitational force to form a thickened sludge of coke breeze in the coke breeze settling zone so that clean supernatant liquid collects above the thickened sludge of coke breeze in the clean liquid zone of the sump.



3,811,573
DIALYSIS APPARATUS
Hans Georg Weder, Maurstrasse 42, 8117 Fallanden, Zurich, Switzerland
Filed Dec. 13, 1972, Ser. No. 314,502
Claims priority, application Switzerland, Jan. 10, 1972, 341/72
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 6 Claims

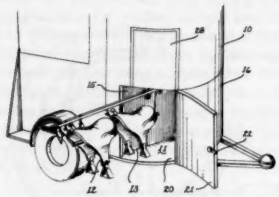


A dialysis apparatus is disclosed having a plurality of dialysis cells. The apparatus comprises guide rods, end plates held on the guide rods, a plurality of individually spring-loaded pressure members and dialysis cells clamped between the end plates, these press members and dialysis cells being arranged in alternating sequence. Two cell halves of each dialysis cell have annular surfaces facing each other. The press members clamp, in a pressed state, by means of these annular surfaces a membrane between the two cell halves whereby two dialysis spaces are sealed in the two cell halves. The two cell halves also have cylindrical peripheral surfaces facing each other by means of which the cell halves are centered in respect of one another.

3,811,574
SADDLE HANGER
John R. O'Brien, 321 E. La Diosa Dr., Tempe, Ariz.
Filed Dec. 22, 1972, Ser. No. 317,694
Int. Cl. B60r *11/00*
U.S. Cl. 211—13 7 Claims

A saddle hanger is disclosed incorporating an elongated support beam movably mounted within a saddle compartment; the support beam being extendable out of the compart-

ment through an opening therein. An elongated saddle support bar is suspended from the support beam and a plurality of



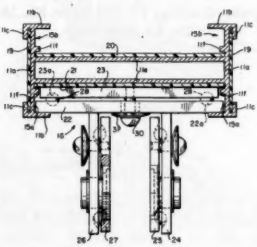
flexible saddle support lines are attached to the beam at one end and detachably secured to the beam at the other end to permit the line to engage the saddlebow of a saddle.

3,811,575

SYSTEM OF CONSTRUCTING DISPLAY RACKING AND SHELVING

Richard A. Boegehold, 5 Greenview Way, Upper Montclair, N.J.

Filed Apr. 5, 1972, Ser. No. 241,333
Int. Cl. A47f 5/10
U.S. Cl. 211—148 **15 Claims**



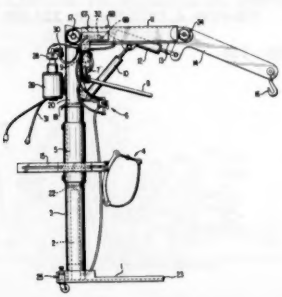
A system for joining two members wherein one member includes opposing wall surfaces defining a track and the other member includes a pair of plates disposed in overlying relation to each other and a control mechanism for moving the plates apart and into frictional contact with the wall surfaces to secure the second member to the first member.

3,811,576

UNIVERSAL ENGINE HEAD LIFT

John Fagen, 2318 W. 4th Ave., Kennewick, Wash.

Filed Feb. 14, 1973, Ser. No. 332,364
Int. Cl. B66c 23/54
U.S. Cl. 212—35 R **8 Claims**



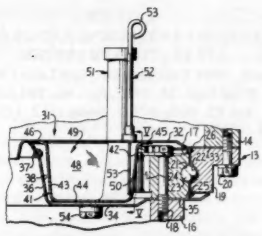
A universal engine head lift having a rectangular base for insertion under the front wheel of an automobile to be worked on, a tubular upright and a two-component boom with a hook for engaging the head of an automobile at the end thereof. The tubular upright has a tire clamp for stabilizing the assembly and truck wheels and a dolly are provided for transporting the assembly. Three hydraulic cylinders with respective control valves determine the angle of the boom and the height and lifting of the boom. Parallel manual and motor actuated hydraulic systems are provided for supplying hydraulic pressure to the cylinders.

3,811,577

ENCLOSED GEAR DRIVE MECHANISM FOR EXCAVATORS

John W. Yancey, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 27, 1972, Ser. No. 238,311
Int. Cl. B66c 23/84
U.S. Cl. 212—69 **16 Claims**



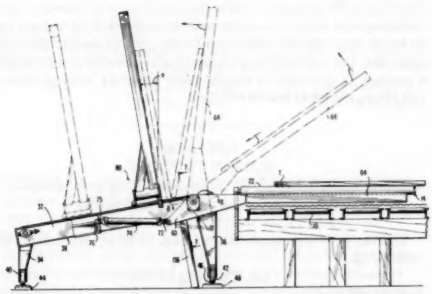
An excavator comprises an upper unit rotatably mounted on a tracked undercarriage. The upper unit is rotated on the undercarriage by selectively driving a swing pinion against a reaction ring gear secured to the undercarriage. An enclosure forms an annular chamber containing the swing pinion and ring gear, including radially disposed and separated compartments for assuring uniform distribution of a lubricating oil therearound when the excavator is tilted.

3,811,578

APPARATUS FOR UNLOADING AND STACKING WOODEN STRUCTURAL FRAMES

John Calvin Jureit, Coral Gables, and Adolfo Castillo, Miami, both of Fla., assignors to Automatic Building Components, Inc., Miami, Fla.

Filed Sept. 19, 1972, Ser. No. 290,315
Int. Cl. B65g 57/28
U.S. Cl. 214—7 **17 Claims**



Disclosed is a conveyor table disposed at the output end of a structural frame prefabricating line. Unloading and stacking

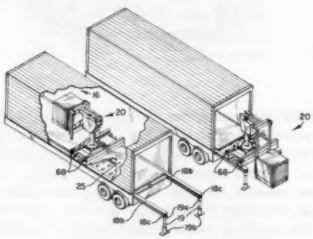
assemblies to one side of the table carry raising arms underlying the conveyor. Each assembly carries a carriage which mounts a rearwardly inclined stacker arm pivotally mounted for swinging movement from a raised stacking position to a generally horizontally disposed frame unloading position to one side of the associated assembly. The raising arms displace the horizontally disposed frame from the conveyor to a generally vertical but over-center position against the inclined stacking arms. Upon return of the raising arms to the conveyor, the carriages are retracted a distance equal to the width of the frame. Upon retracting movement of the carriages a predetermined distance, the stacking arms are unlocked from the carriage and the weight of the frames is transferred to the arms to maintain them in the upright position. After a predetermined number of frames are stacked, the frames are banded together and lifted from the assemblies whereupon the stacker arms pivot to their generally horizontal position for movement in a forward direction toward the conveyor for receiving additional frames.

3,811,579

MECHANIZED VAN LOADING AND UNLOADING APPARATUS AND SYSTEM

David F. Black, 3904 Hallmark Dr., Salt Lake City, Utah

Filed Sept. 25, 1972, Ser. No. 291,663
Int. Cl. B65g *67/02*; B60p *1/52*, *1/54*
U.S. Cl. 214—38 D **13 Claims**



Apparatus and a system for its use including mechanized means for moving a load of freight, as a unit, into or out of a van-type trailer, and a mechanized carrier for transporting portions of the load thereon which carrier is designed to take up a minimum cubic area within the trailer interior. The mechanized carrier is arranged to travel the length of the trailer and is capable of lateral and vertical movement therein to bring freight supporting means into contact with selected items of freight. The carrier is installed at the rear of the trailer behind or at the face of a load to off-load, at a delivery point, all or part of a load. The mechanized carrier is mounted to travel on rails arranged within the trailer, which railway can be extended out from the trailer and be supported on a dock area or by an appropriate stanchion to the ground below the trailer such that the carrier can exit the trailer thereover and deposit a portion of the load of freight onto the dock area or directly onto the ground below the trailer.

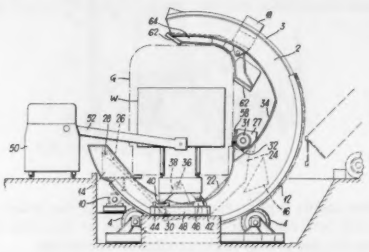
3,811,580

WAGON TIPPLERS

Gilbert Leslie Sheppard, Keynsham, England, assignor to Strachan & Henshaw Limited, Bristol, England

Filed Apr. 16, 1973, Ser. No. 351,411
Claims priority, application Great Britain, Apr. 20, 1972, 18476/72
Int. Cl. B65g *67/54*
U.S. Cl. 214—55 **6 Claims**

A tippler for the discharge of rail wagons has a rail table mounted on a rotary support structure. The structure comprises spaced coaxial end frames of open arcuate form the central axis of the frames being the axis of rotation of the structure. The wagon track on the rail table has its centre line in a vertical plane at or close to said axis of rotation. A charger



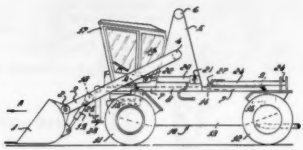
located alongside the tippler has a laterally extending arm and the arcuate forms of the end frames define aligned openings through which the arm passes to entrain wagons onto and from the tippler.

3,811,581

IMPLEMENTS

Cornelis Van Der Lely, Zug, Switzerland

Division of Ser. No. 26,291, April 7, 1970, Pat. No. 3,757,976.
This application May 17, 1973, Ser. No. 361,256
Int. Cl. B66f *9/00*
U.S. Cl. 214—131 A **10 Claims**



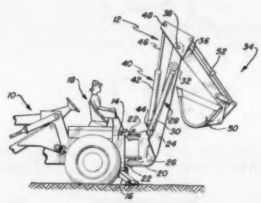
An agricultural tractor has a load supporting area to receive removable working tool and/or container attachments. The supporting area and the attachments have cooperating lifting devices and flaring parts that orient and retain the attachments during operation. Quick release elements are located on the tractor and attachments to cooperate with the lifting devices and lock the attachments in place as same are lowered on the load area. The lifting devices and quick release elements can be hydraulically operated.

3,811,582

BACKHOE BOOM LOCK

John F. Shumaker, Mount Pleasant, and James O. Morehouse, Burlington, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 4, 1972, Ser. No. 223,688
Int. Cl. B66f *9/00*
U.S. Cl. 214—138 **11 Claims**



A backhoe is releasably locked to its support by pivotal movement of the backhoe to its transport position and is un-

locked by manipulation of the earth working tool ram carried by the boom. The releasable lock consists of a pin carried by either the boom or the support, and a lug having a recess and inclined camming surface for guiding the pin into the recess. Either the pin or the lug is normally biased to a first position and is movable from the first position by interengagement between the pin and the camming surface when the boom is moved to its transport position to locate the pin in the recess and lock the boom to the support. By proper manipulation of the fluid ram associated with the earth working tool, the pin and recess are separated to allow the boom to be pivoted from the transport position.

3,811,583

METHOD FOR MOVING AND LIFTING A SHIP SECTION

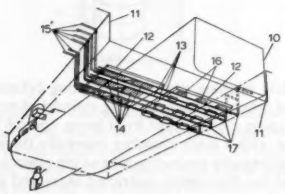
Albert Arthur Weeks, Whippingham, England, assignor to British Hovercraft Corporation Limited, Somerset, England

Filed Aug. 7, 1972, Ser. No. 278,229

Claims priority, application Great Britain, Sept. 23, 1971, 44397/71

Int. Cl. B63c *1/02*

U.S. Cl. 214—152 **6 Claims**



The movement of a section of a ship during assembly or repair is facilitated by cushions of pressurised fluid positioned beneath the section, lateral escape of the fluid being prevented by flexible skirts. When in position the section is raised to a desired height by fluid inflatable lift bags. The fluid may be water, and when working in a dry dock is advantageously sea water.

3,811,584

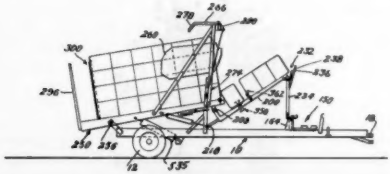
METHOD OF OPERATION OF A SINGLE BALE UNLOADING BALE WAGON

Donald M. Grey, Selma; Lee D. Butler, Kingsburg; Jerry W. Welker, Fresno, and Jack W. Crane, New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Division of Ser. No. 194,305, Nov. 1, 1971, Pat. No. 3,706,389, which is a division of Ser. No. 870,828, June 6, 1969, Pat. No. 3,638,808, which is a division of Ser. No. 755,141, Aug. 26, 1968, Pat. No. 3,502,230. This application Oct. 2, 1972, Ser. No. 294,417

Int. Cl. B65g *57/32*

U.S. Cl. 214—152 **8 Claims**



A bale wagon which unloads bales one at a time. The wagon is provided with a bale pick-up, a bale tier former, and a load rack which receives the tiers of bales from the bale tier former. A cross conveyor is mounted on the bale tier former, and when discharging the bales are dropped a tier at a time from the load rack onto the bale tier former, the lowest layer of bales on the tier being engaged by the cross conveyor and discharged, while the layer next above the lowest layer is held from interference with the lowest layer.

3,811,585

METHOD OF PROCESSING TOBACCO IN A BLEND-BULK SILO

Edwin L. Wilding, Louisville, Ky., assignor to Griffin & Company, Louisville, Ky.

Division of Ser. No. 159,823, July 6, 1971, Pat. No. 3,735,881. This application Jan. 22, 1973, Ser. No. 325,548

Int. Cl. B65c *65/32*

U.S. Cl. 214—152 **10 Claims**

A method for processing tobacco, which varies between a single type and a plurality of types, includes a plurality of bulk storing and blending steps. A shuttle car and conveyor carried thereon traverses a longitudinal storage bin or silo as the conveyor is controlled to deposit tobacco placed thereon into the silo beneath the conveyor. To store tobacco, the shuttle is moved incrementally while the conveyor is operated in the direction of that portion of the silo to be charged. To blend tobacco, the shuttle is reciprocated while the conveyor is operated in a direction toward that portion of the silo to be charged so as to deposit a plurality of layers into the silo. The shuttle and conveyor are operable to manually or automatically charge selected portions of the silo. The speed of the conveyor is varied in several of the blending steps to insure layers of even thicknesses. Tobacco is deposited on the conveyor by an additional shuttle and associated conveyor, the speed of the latter also being varied to insure deposited layers of even thickness on the first conveyor.

3,811,586

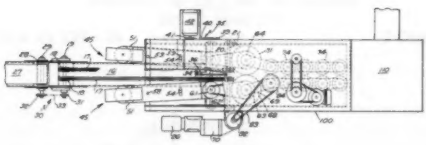
BAG OPENING AND EMPTYING MACHINE

Gilbert V. Lavoie, 311 Elm St., Raynham, Mass.

Filed Feb. 24, 1972, Ser. No. 229,095

Int. Cl. B65g *65/04*

U.S. Cl. 214—305 **4 Claims**



A machine for slitting and emptying bags containing free flowing particles of material. It has a mechanically driven belt conveyor that transports vertically oriented bags along the first portion of a predetermined path. A rotary or stationary knife is positioned at the end of the first portion of the path for slitting the bottom portion of each bag as it passes thereover. Bag flatteners are positioned to extend inwardly over the conveyor from its opposite lateral edges to guide and compress the bags as they approach the knife and also to provide support for keeping the bags vertically oriented. Bag ejector means in the form of pinch rollers are positioned immediately

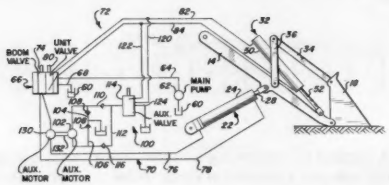
rearwardly of the knife to grip the top edge of the vertically oriented bags and carry them along a second portion of the predetermined path. Mechanical beaters are positioned on laterally opposite sides of the second portion of the predetermined path to aid in emptying all the particles of material in the bags into the hopper that extends along the bottom of the machine.

3,811,587

HYDRAULIC LEVELING CIRCUIT FOR IMPLEMENT

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case, Company, Racine, Wis.

Filed July 17, 1972, Ser. No. 272,365
Int. Cl. E02f *3/87*
U.S. Cl. 214—763 **13 Claims**



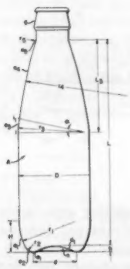
The disclosure relates to a hydraulic circuit for a vehicle having a boom pivoted thereon by a boom ram and a bucket pivoted on the boom by a bucket ram. The hydraulic circuit includes a main pump that supplies fluid under pressure from a reservoir to the boom and bucket rams through control vales. An auxiliary circuit supplies fluid from the reservoir to the bucket ram to maintain the material handling unit at a predetermined attitude with respect to the reference plane and the auxiliary circuit includes a pump that is driven by the flow of fluid between the boom control valve and the boom ram.

3,811,588

BOTTLE

Leon Roger Vermeerbergen, Ol Lagnieu, and Guy Antoine Flamand, Chalon-sur-Saone, both of France, assignors to Saint-Gobain Industries, Neuilly sur Seine, France

Filed Apr. 6, 1972, Ser. No. 241,708
Claims priority, application France, Apr. 8, 1971, 71.12439
Int. Cl. B65d *1/02*
U.S. Cl. 215—1 C **7 Claims**



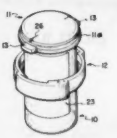
A bottle of especial utility is disclosed. The bottle may be made of synthetic material as polyvinyl chloride. The bottle is formed by the rotation of a faired generating line made up from a straight linear segment and arcs of selected radii and centers about a central longitudinal axis. The linear segment of the generating line is parallel with the axis and the arcs are tangent at their points of juncture with each other and with the linear segment. The generating line thus rotated defines a form from which a mold is readily and inexpensively made to produce a bottle having adequate strength. The bottle may be used to contain, in particular, carbonated and like beverages or liquids. The bottom of the bottle is interiorly convex reentrant shape and has an exterior integral diametral reinforcing rib.

3,811,589

CHILD-RESISTANT CONTAINER ASSEMBLY AND COMPONENTS THEREOF

Theodore Wayne Thornton, and Ronald W. Thornton, both of 2036 Laird Dr., Salt Lake City, Utah

Filed May 30, 1972, Ser. No. 257,774
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **13 Claims**



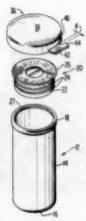
A safety latching ring, for protecting cylindrical medicine vials and other containers having cylindrical mouths provided with snap-on closure caps from being opened by children, is provided with a latch chamber internally thereof for each of the usual laterally projecting tabs of the closure cap. The latch chamber has frictionally restricted entry and exit, so that, in their latched relationship, the cap and the protective latching ring freely rotate in unison relative to the vial to thereby prevent opening of the vial unless the cap is pressed tightly against the vial rim. Such pressure frictionally anchors the cap to the vial, permitting the latching ring to be rotated relative thereto for moving each tab into or out of its latching chamber. The combined pressing and turning actions necessary to release the latching ring from the vial cap are too much for children to manage. The vial cap preferably has two, three, or even more tabs symmetrically arranged and the latching ring a corresponding number of latch chambers correspondingly arranged. For added safety, the vial and vial cap are both shouldered circumferentially to mate with corresponding formations of the latching ring and prevent anchoring pressure from being transmitted from the latching ring through the cap to the vial.

3,811,590

SAFETY MEDICINE BOTTLE CLOSURE

Samuel Hall, Jr., Brooklyn, N.Y., assignor to Plastic Container Corporation, Brooklyn, N.Y.

Filed June 30, 1972, Ser. No. 268,198
Int. Cl. B65d *55/02*; A61j *1/00*
U.S. Cl. 215—9 **7 Claims**



A safety container closure for small plastic medicine bottles. A plug is inserted into the top or neck, in a tight friction-

fit. The plug carries a key recess. An outer cap fits over the top of the container, and carries a key molded to it. The key is placed into the recess, and the plug engaged for withdrawal. An upper rib on the plug fits into a groove in the container to inhibit dislodgement.

3,811,591

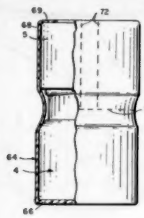
DUALLY SEALABLE, NON-LEAKING VIAL FOR SHIPPING RADIOACTIVE MATERIALS

Howard Novitch, Walnut Creek, Calif., assignor to New England Nuclear Corporation, Boston, Mass.

Division of Ser. No. 190,490, Oct. 19, 1971. This application Oct. 16, 1972, Ser. No. 297,810

Int. Cl. B65d *65/28, 85/70*

U.S. Cl. 215—12 R **4 Claims**



A dually sealable, non-leaking vial for shipping liquid radioactive materials, particularly sterile radioactive materials, and other sterile liquid materials in which the mouth of the vial, as shipped, is sealed by a needle pierceable septum seal and in which a threaded cap is located and held over the septum seal and mouth with the threads thereby held out of engagement with mating threads on the vial by the septum seal. However, upon removal of the septum seal after shipment, the threads of the cap mate with the threads of the vial whereby the cap can be removably threaded tightly over the mouth to seal it.

The capped and septum-sealed loaded vial is placed in a heat shrinkable plastic envelope having a bottom end wall and an upstanding cylindrical wall of greater height than the capped, septum-sealed vial and of lesser thickness than the bottom end wall and the envelope is heat shrunk circumferentially, tightly and sealably around the capped septum-sealed vial with the upper part of the envelope being shrunk circumferentially and downwardly tightly over the margin of the upper surface of the cap to securely seal the capped septum-sealed vial.

3,811,592

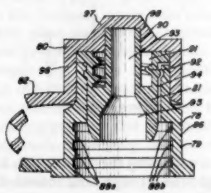
RECEPTACLE CLOSURE CAP

John F. Dye, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 22, 1971, Ser. No. 210,921

Int. Cl. B65d *47/12, 47/32*

U.S. Cl. 215—73 **6 Claims**



A receptacle for collecting fluid samples including, a vial having a fluid retention cavity opening through the top of the vial. The receptacle has a closure member which is removably secured to and covers the top of the vial. The closure member has a passageway communicating between the vial cavity and the outside of the closure member when the closure member is secured to the vial. The receptacle also has a cap which is removably secured to the closure member and which covers the outer end of the passageway relative to the vial cavity. The closure member is secured to the vial and the cap is removed from the closure member to take fluid samples through the passageway, and the cap is secured to the closure member to cover the passageway for retaining collected samples in the vial. The secured cap and closure member are removed from the vial to provide access to the collected samples.

3,811,593

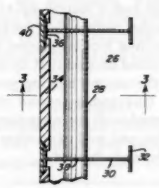
DOUBLE WALL CARGO TANK HAVING INSULATING SECONDARY BARRIER

Thomas F. Bridges, Port Washington; Petros Lalangas, Bronx, both of N.Y., and Carl H. Sjostrom, Cranberry, N.J., assignors to John J. McMillen Associates, Inc., New York, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,042

Int. Cl. B65d *25/18*

U.S. Cl. 220—9 LG **30 Claims**



A double wall tank for transporting cryogenic materials by ship. The inner wall of the tank, the primary barrier, takes the form of an integral metallic corrugated structure. The outer wall of the tank, the secondary barrier, takes the form of a plurality of insulating panels structurally connected to the inner wall of the tank through the means of external webs and is in liquid and gas-tight relation to external face plates. There are disclosed several types of insulating panels, several procedures for attaching the panels to the external face plates, and several procedures for securing adjacent panels to one another.

3,811,594

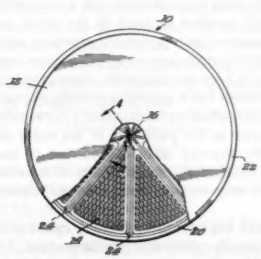
UNITARY CONTAINER FOR A FOOD PRODUCT

Jeno F. Paulucci, Duluth, Minn., assignor to Jeno's, Inc., Deluth, Minn.

Filed Nov. 26, 1971, Ser. No. 202,081

Int. Cl. B65d *1/36*

U.S. Cl. 220—20 **2 Claims**



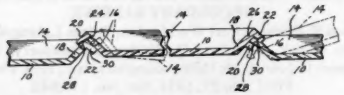
A unitary circular container for receiving a food product, the container having a segmented floor and a side wall around

the periphery of the floor. The floor has a central support core extending upward to the level of the side wall and an odd number of camming surfaces extending radially from the side wall to the central support core. The camming surfaces serve to direct the food product into the segmented portions.

3,811,595
INTERLOCKING SERVING TRAY

Thomas H. Eckdahl, Brooklyn Center, and Robert F. Bateman, St. Paul, both of Minn., assignors to Plastics, Inc., St. Paul, Minn.

Filed June 12, 1972, Ser. No. 262,055
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 **2 Claims**

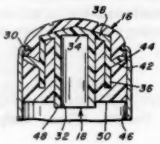


An interlocking tray including a flat bottom having opposed first and second end walls thereon with a first lip extending from the first end wall and a second lip extending from said second end wall together with a first locking groove on the first end wall and a second locking groove on the second end wall, and a first rib formed on said first lip of the first end wall for engagement with the second locking groove of the second end wall of another tray and a second rib formed on said second lip of the second wall for engagement with said first locking groove of a first end wall of another tray to removably connect the trays at the ends thereof.

3,811,596
BALL BAT CONSTRUCTION

Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 121,677, March 8, 1971, Pat. No. 3,703,290. This application May 22, 1972, Ser. No. 255,895
Int. Cl. B65d *51/00*; A63b *59/06*
U.S. Cl. 220—24 A **9 Claims**



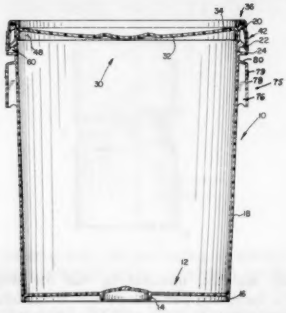
An end plug for a hollow ball bat. The end plug has a substantially rigid inner plug member and a resiliently compressible outer plug member secured to the inner member. The outer plug member has a periphery provided with a generally cylindrical lower portion and an upper portion separated from the lower portion by an outwardly open annular recess. The inner plug member has a generally radially outwardly directed stabilizer portion which extends radially outwardly at least to a position adjacent to the periphery of the outer plug member. The outwardly directed stabilizer portion of the inner plug member may be divided into a plurality of individual stabilizer segments and may be provided with underlying reinforcing members.

A hollow ball bat having a generally cylindrical barrel portion and a generally cylindrical handle portion. At least one of the barrel and handle portions terminating in an open end provided with a transversely inwardly directed flange which is engaged within the annular recess of the end plug to provide an effective mechanical joint between the bat and the end plug. The composite end plug serves to provide both sound and vibration deadening means and integral structural reinforcing means resisting relative axial movement between the end plug and the ball bat.

3,811,597
PLASTIC CONTAINER

Henry E. Frankenberg, Hinsdale, and Harry A. Peyser, Olympia Field, both of Ill., assignors to Continental Can Company, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,438
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **20 Claims**

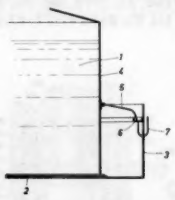


An improved plastic container and cover in which the container is an open cup-shaped member and the cover comprises a web with a peripherally depending skirt. The container and skirt on the cover are provided with a first cooperating closure means and a second cooperating reclosure means, while the skirt has access areas for permitting access of the tool therethrough whereby the first closure means may be disengaged.

3,811,598
STORAGE TANK INSTALLATION

Karl Schwarz, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Aug. 5, 1971, Ser. No. 169,174
Claims priority, application Austria, Sept. 22, 1970, 8541/70
Int. Cl. B65d *25/00, 25/24*
U.S. Cl. 220—88 R **3 Claims**

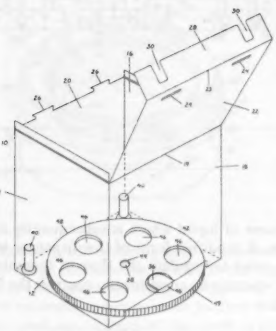


A covering for a collecting tub defining an annular channel around an aboveground storage tank intended to hold an inflammable liquid having a predetermined combustion temperature comprises an annular roof consisting of a plastics material which tends to disintegrate rapidly and substantially without formation of a flame at said combustion temperature.

3,811,599
TWO-PART COMBINATION CONTAINER AND TABLET DISPENSER

Donal J. O'Connor, Chicago, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Oct. 13, 1972, Ser. No. 297,183
Int. Cl. B65h *3/00*
U.S. Cl. 221—265 2 Claims



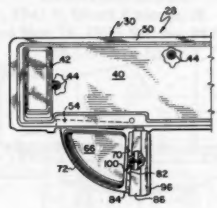
A two-part combination container and tablet dispenser wherein the container portion is integrally molded, having a base, top, and front and side walls. The top is hingedly formed in the open position on the upper edge of the front wall and is adapted to move freely toward the rear wall to a closed position secured by closure means formed in the top with mating closure means on the upper edge of the rear wall. A flange is integrally formed on the upper edge of the top and depends therefrom for mounting the container to any suitable support when the top is in the closed position. The container is molded with the base having an upstanding tapered stud formed thereon, with a tablet discharge slot formed at the front edge of the base, with recess defined by the lowermost portion of the front wall and the front edge of the base, and with a projecting shield spaced over said recess. The tablet dispenser portion comprises a molded rotatable disc having a plurality of spaced tablet receiving openings and a central tapered hub therethrough which mates and locks onto the upstanding stud in the base. In this position, a portion of the periphery of the disc extends through the recess for easy manual rotation whereby a tablet-receiving opening is brought into registry with the tablet discharge slot to discharge a tablet therethrough. The projecting shield prevents tablets from clogging or accumulating at a tablet-receiving opening as the disc is rotated so that a single tablet is discharged at each rotation of the dispenser disc.

Efficient and economical tablet dispensers assume an increasing importance as improved technology provides a great variety of substances in tablet form. Some substances which are provided in this form are candy, medicinals, vitamins, salt, disinfectants, and plant nutrients, to mention a few. Diverse tablet dispensers have been provided by the prior art with the objective of dispensing tablets conveniently and efficiently with a minimum of handling, breakage and/or contamination. Combined tablet containers and dispensers have been devised to minimize handling expense and to reduce chances for contamination. One such dispensing container is described by U.S. Pat. No. 2,742,200 which provides a cardboard blank which can be folded into the shape of a box with the walls being secured in their assembled relation by suitable adhesive. Inserted into the formed box is a dispenser unit comprising a base plate, a dispenser wheel and means for mounting said wheel onto the base-plate.

3,811,600
TREATING AGENT DISPENSER FOR AUTOMATIC WASHING MACHINE

James E. Allison, Jeffersontown, and Bob F. Boecker, Louisville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 11, 1972, Ser. No. 296,618
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 11 Claims

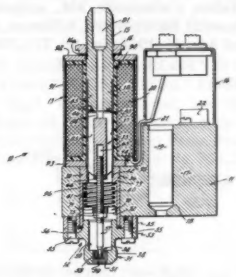


There is disclosed a dispenser for storing and dispensing treating agent in an automatic washing machine. The dispenser is designed to position the treating agent container in a sealed storage position regardless of variations in the device caused by manufacturing and assembly tolerances.

3,811,601
MODULAR SOLENOID-OPERATED DISPENSER

Alan B. Reighard, Bay Village, and Simon Z. Tamny, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Sept. 11, 1972, Ser. No. 287,646
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE 8 Claims



A solenoid-operated dispenser for dispensing liquid materials. The dispenser comprises a heated service module which contains static parts, a gun module which contains all of the movable parts of the dispenser, and a solenoid coil module, all three modules of which are resiliently held in an assembled relationship by a single threaded nut.

3,811,602
PARTICULATE MATERIAL RETAINING GATE

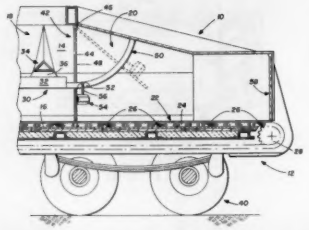
John H. Holland, Norman, Okla., assignor to Arkansas Rock and Gravel Co., McAlester, Okla.

Filed Aug. 17, 1972, Ser. No. 281,388
Int. Cl. B60p *1/38*
U.S. Cl. 222—178 16 Claims

A particulate material delivery vehicle includes a semi-trailer chassis comprising opposed side walls and a floor. The side walls and the floor define a generally V-shaped particu-

late material receiving hopper and extend beyond the rear end of the hopper to define a discharge chute. An endless conveyor is supported on the semitrailer chassis for movement around a course extending through the hopper and through the discharge chute to unload particulate material from the hopper through the discharge chute and to discharge particulate material from the extreme rear end of the vehicle.

A particulate material retaining gate is supported on the semitrailer chassis between the particulate material receiving hopper and the discharge chute. The gate comprises a plate



which is substantially identical in cross-section to the particulate material receiving hopper and which is pivotally supported on the chassis for movement between a closed position wherein it blocks the rear end of the hopper and an open position wherein it permits flow of particulate material out of the hopper and through the discharge chute under the action of the endless conveyor. During transportation of particulate material into the vehicle the plate is retained in the closed position and functions to retain the particulate material in the hopper. Subsequently the plate is released to the open position whereupon the conveyor is actuated to unload the vehicle.

3,811,603

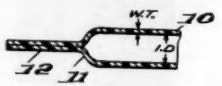
DROPPER AND STIRRER DISPENSING A SINGLE DROP

Lloyd Crosser Felton, Cockeysville, Md., assignor to Hynson, Westcott & Dunning, Incorporated, Baltimore, Md.

Filed Apr. 15, 1968, Ser. No. 721,299

Int. Cl. B65d *47/18*

U.S. Cl. 222—420 **4 Claims**



A disposable (i.e., single-use) dropper for delivering a single drop of liquid, e.g., blood plasma or serum to, and distributing the drop of liquid over a (predetermined) area of, a substrate. The article comprises a tube formed of resilient, essentially non-plasticized, plastic material having hydrophobic properties, and being inert with respect to the liquid being dispensed. One end of the tube is open and clearly cut at right angles to the major axis of the tube, while the opposite end is closed and collapsed for a distance of about a half-inch or less from its terminus. The collapsed portion of the tube is formed as a paddle-like stirrer.

3,811,604

LIQUID DISPENSING DEVICE

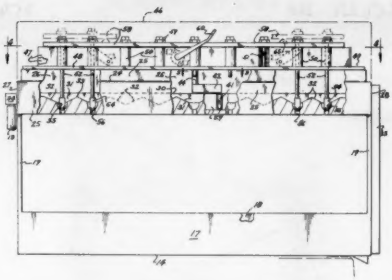
Elmer L. Perry, 1203 7th St., La Grande, Oreg.

Filed Feb. 16, 1973, Ser. No. 332,931

Int. Cl. G01f *11/02*

U.S. Cl. 222—429 **8 Claims**

A cabinet housed dispenser for the simultaneous filling of a tray of drinking glasses. Multiple valve stems seat within discharge orifices with the stems urged upwardly to an open position by a cam or solenoid actuated plate. Spring means seats each valve stem downwardly to a closed position. Diversion means divert a trough carried water flow into multiple recessed areas of equal size for the collection therein of an



equal volume of liquid which is subsequently discharged into each glass. A modified form of the dispenser includes a float actuated valve to regulate the flow of incoming fluid into a tank. An operator lever uniformly controls the flow from each tank orifice.

3,811,605

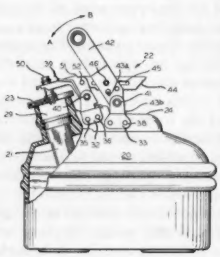
SAFETY CONTAINER FOR INFLAMMABLE FLUIDS

Frank S. Flider, Chicago, Ill., assignor to The Justrite Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 98,557, Dec. 16, 1970, abandoned. This application May 27, 1971, Ser. No. 147,522

Int. Cl. A47g *19/14*

U.S. Cl. 222—472 **5 Claims**



A completely enclosed plastic container having a neck-like opening closed by a spring biased cap. The cap is controlled by a handle linkage attached to a vertical fin formed on the can by an enlargement of the flash line between the two plastic mold parts which are joined together to mold the container, the neck-like opening, the vertical fin and a handle. The fin extends between and is integral with the neck-like opening and the handle. Thus, the fin reinforces the handle and adds strength thereto.

3,811,606

REMOVABLE COVER FOR PAINT CONTAINER RIM

Jerome C. Higgins, 3139 E. Glenrosa Ave., Phoenix, Ariz.

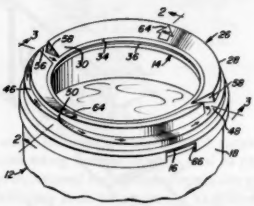
Continuation-in-part of Ser. No. 79,170, Oct. 8, 1970, abandoned. This application Dec. 30, 1971, Ser. No. 214,291

Int. Cl. B65d *5/74*

U.S. Cl. 222—570 **6 Claims**

An attachable and detachable annular collar-like compressibly resilient plastic cover for temporary use atop the cir-

cumferentially grooved lid supporting lip or rim commonly present on the upper openable end of a paint containing can. The lower inner and outer peripheral portions of the cover have inwardly directed circumferential portions for snap engagement over the usual inner and outer rim beads of the can rim and the cover assembly seats atop the rim in reasonably good fluid-tight sealed engagement therewith. The cover includes conical inwardly and downwardly sloping top surfaces which cause surplus paint to gravitate back into the can and a narrow smooth inner peripheral surface is fashioned into and



provides an efficient brush scraping edge. Diametrically opposite generally radial recesses are formed in the top surface of the cover to provide paint returning notches and the cover further includes encircling outer grooves located at the juncture of the outer and top surfaces of the cover to provide an effective drip catcher communicatively cooperable with the paint return notches. Also, diametrically opposite upper surface portions of the cover disposed between and spaced from the notches are selectively usable for pouring paint from the associated paint containing can.

3,811,607

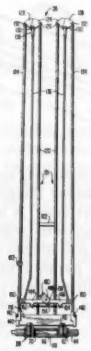
HOSIERY FORM

John W. Glaze, Jr., Charlotte, N.C., assignor to Intech Corporation, Charlotte, N.C.

Division of Ser. No. 66,338, Aug. 24, 1970, Pat. No. 3,704,565. This application Aug. 18, 1972, Ser. No. 281,979

Int. Cl. D06c *15/00*

U.S. Cl. 223—74 **12 Claims**



A hosiery form for semi-boarding hoisery articles is collapsible to facilitate loading and stripping. Each form comprises a pair of upstanding leg forms which together accomodate a bifurcated hosiery article. Each leg form comprises a pair of generally parallel elongated rods attached at one end to a base. One of the rods is fixed and the other rod is laterally movable. Attached to the free ends of the rods are a pair of interlocked toe expansion plates that are so configured as to accomodate the toe of the hosiery article. An expansion mechanism is connected to the movable rod to move it between the expanded position and the collapsed position. The expansion mechanism has a spring biased overthrow linkage to hold the rods in either the expanded position or the collapsed position.

3,811,608

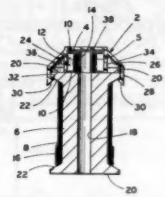
BOBBIN RETAINER ATTACHMENT FOR A THREAD CARRYING SPOOL

Henry L. Olney, 3745 N. Olcott, Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,172

Int. Cl. A41b *3/00*

U.S. Cl. 223—106 **6 Claims**



The bobbin retainer attachment for a thread carrying spool has a retainer mounted on the end of the spool of thread by retainer clamping fingers which attach on to the spool and extend in the direction of axis of the spool. The retainer has a bobbin storage housing connecting with the fingers and held on the end of the spool by the fingers with the open end of the housing abutting against the end wall of the spool to hold a bobbin therein. The fingers extend from the periphery of the retainer and clamp around the peripheral enlarged end edges of the spool. Also an annular clamping finger can extend from the central portion of the housing and through the bobbin and into and against the bore of the spool in wedging fashion.

3,811,609

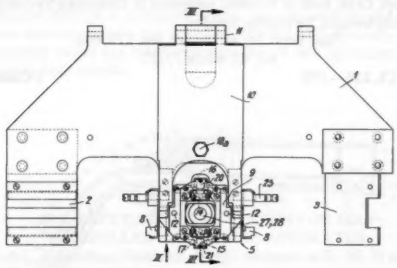
DEVICE FOR ADJUSTING THE POSITION OF FLEXIBLE STRIP PROVIDED WITH LATERAL PERFORATIONS

Pierre Louis Sigel, Villeneuve-le-Roi, and Raymond Louis Delorme, Bagnolet, both of France, assignors to Societe Honeywell Bull (Societe Anonyme), Paris, France

Filed May 29, 1973, Ser. No. 364,233

Int. Cl. B65h *17/38*

U.S. Cl. 226—52 **11 Claims**



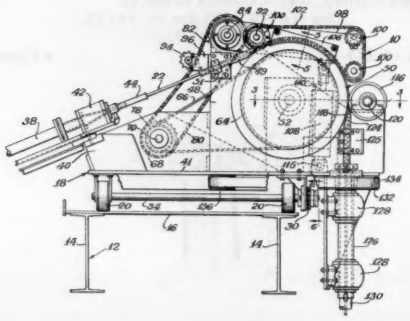
An apparatus is provided for adjusting the position of a flexible strip which is provided with two rows of perforations. A support is provided with a running surface for the strip, with pins housed in the support which may project so as to enter the perforations. Swinging grippers, which cooperate with the pins, are hinged to the support so as to press the strips against the running surface.

3,811,610

ROD HANDLING APPARATUS

Kenneth F. Edwards, Lancaster, Ohio, and Ralph A. Vogel, Three Rivers, Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 167,986, Aug. 2, 1971, abandoned. This application Oct. 12, 1971, Ser. No. 188,026
Int. Cl. B65h 17/34
U.S. Cl. 226—171 11 Claims



An apparatus for guiding and controlling the path of travel of a continuously moving metallic rod, such as rolled copper rod. A rotating wheel has a peripheral groove for receiving and pulling the rod for maintaining proper tension thereon. A continuously moving chain is operatively mounted on a frame which is pivotally mounted so that the chain can be selectively moved in and out of peripheral engagement with the periphery of the rotating wheel. When the chain is in peripheral engagement with the rotating wheel, the chain positively forces the rod into engagement with the peripheral groove. Thereafter, the chain is moved out of peripheral engagement with the wheel and the moving rod remains in engagement with the groove between an entrance position and a discharge position.

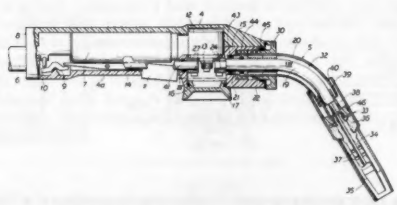
Preferably, a device signals when the rod is in engagement with the peripheral groove and moves the frame for the moving chain to a position spaced from the rotating wheel and from the moving rod.

3,811,611

WELDING GUNS

Lars Helge Gottfried Tholander, Huskvarna, and Harry Thostrup, Laxa, both of Sweden, assignors to Elektriske Svetsningsaktiebolaget, Enkoping, Sweden

Filed Sept. 10, 1971, Ser. No. 179,498
Int. Cl. B65h 17/22
U.S. Cl. 226—178 1 Claim



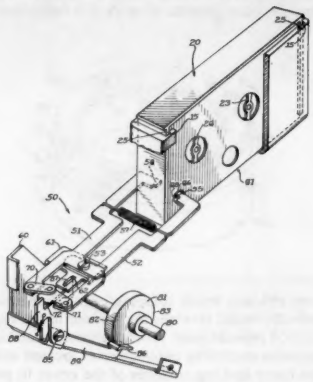
A welding gun for consumable electrode welding provided with a compressed-air electrode advancing motor and a throttle valve provided between the outlet of said motor and the atmosphere for adjusting the speed of the motor.

3,811,612

FILM SNUBBER CONTROL SYSTEM

Kenyon A. Hapke, Libertyville, and John P. Bagby, Lake Forest, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed June 28, 1973, Ser. No. 374,281
Int. Cl. B65h 23/08
U.S. Cl. 226—195 11 Claims



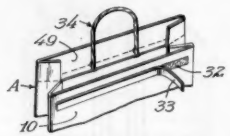
A film snubber activating and control system for use with a film cassette having a rotatable and lockable film snubber. The system includes snubber locking means arranged to selectively lock and release said film snubber in a manner which will maintain the cassette in a selected location.

3,811,613

HANDLED BAG

Robert E. Harrison, Newburgh, N.Y., assignor to Hoerner Waldorf Corporation, Ramsey, Mich.

Filed May 22, 1972, Ser. No. 255,430
Int. Cl. B65d 31/10, 33/12, 33/02
U.S. Cl. 229—54 C 5 Claims



A handled bag is provided having opposed walls. A first wall is provided with a reinforcing flange folded downwardly to provide a reinforced upper edge. A handle is secured to the inner surface of the opposite wall to project upwardly therefrom. A closure flange is hinged to the upper edge of the opposite wall and is slit to permit it to be folded past the handle and outwardly of the first wall to provide a bag closure. A tape covered adhesive area on the first wall permits the sealing of the closure flange to the first walls when the tape is removed.

3,811,614

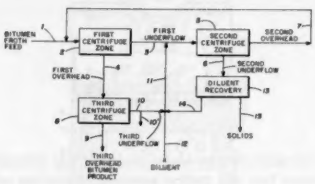
METHOD FOR CENTRIFUGING OF TAR SANDS FROTH

Daniel J. Curtin, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 5, 1973, Ser. No. 367,199
Int. Cl. B04b 11/02
U.S. Cl. 233—18 7 Claims

A method for treating tar sands bitumen froth wherein said froth is subjected to centrifugation in a first centrifuging zone

to remove coarse particles therefrom and is thereafter treated in at least one second centrifuging zone to remove additional coarse particles, the overhead from the second centrifuging zone immediately downstream of the first centrifuging zone being utilized at least in part as part of the feed for the first



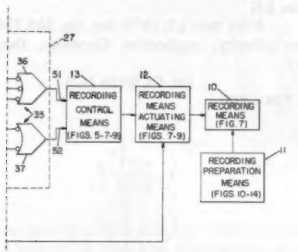
centrifuging zone, the overhead from each succeeding second cetrifuging zone being used at least in part as part of the feed for the next prior second centrifuging zone, the overhead from the first centrifuging zone being passed to a third centrifuging zone wherein fine particles are separated thereby producing a third overhead bitumen product.

3,811,615

RECORDING DEVICE CONTROL SYSTEM

Izumi Yamanaka, Hiratsuka; Hironobu Sato, Isehara, and Yoshihiro Takeuchi, Fujiwawa, all of Japan, assignors to The National Cash Register Company, Dayton, Ohio

Filed Mar. 12, 1973, Ser. No. 340,465
Int. Cl. B41j 9/38; G06c 11/04
U.S. Cl. 235—58 P **12 Claims**



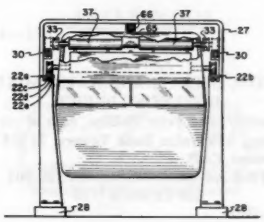
A control system for ensuring proper operation of a recording device during the cycling thereof in the event of loss of operating voltages. The recording device is operable in a cycle having a recording preparation phase and a recording phase. The recording phase occurs after the completion of the recording preparation phase and a recording means actuating means, when operated during such recording phase, causes a recording or non-recording operation which is determined by operation, or not, of a recording control means after completion of such recording preparation phase. The recording device is connected to a power source which has power supply means connected thereto. The control system comprises first detecting means coupled to the power source which is responsive to a voltage failure condition and second detecting means coupled to the power supply means which is responsive to removal of such voltage failure condition. The control system further includes first timing means for developing a first timing signal occurring during the recording preparation phase and second timing means for developing a second timing signal occurring during the recording phase. The control system is further provided with circuit control means coupled to the first and second detecting means and the first and second timing means which is operable to inhibit operation of the recording control means upon occurrence of a voltage failure condition at the power source during the recording preparation phase or upon removal of such voltage failure condition so that the recording means actuating means when operated during the recording phase will effect a non-recording operation. The control system is also operable to cause operation of the recording control means upon lack of a voltage failure condition at the power source or upon the occurrence of a voltage failure condition at the power source during or after initiation of the recording phase so that the recording means actuating means when operated will effect a recording operation.

3,811,616

HIGH SPEED TRAIN TRACK

Raymond Lashley, Syracuse, Utah

Division of Ser. No. 65,630, Aug. 20, 1970, Pat. No. 3,728,974.
This application Mar. 22, 1973, Ser. No. 343,830
Int. Cl. E01b 5/08
U.S. Cl. 238—150 **4 Claims**



A composite laminated construction track for use in a relatively low cost and economically operated high speed passenger transportation system wherein motive vehicles are coupled to provide transportation for large numbers of people. A powered main vehicle that may be one unit or more than one coupled unit is provided to travel between terminal stations and detachable passenger ferrying auxiliary vehicles are used to transport passengers and their baggage between the main vehicle and intermediate loading or unloading stations. Operation of the independently powered motive vehicles is coordinated through a computer system, sensing units on the vehicles provide signals for coupling control and specially constructed tracks and track switching insure safe operation even at very high speeds.

3,811,617

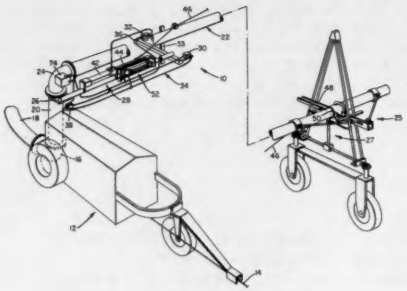
90° SAFETY SHUTOFF SYSTEM FOR SELF-PROPELLED SPRINKLING APPARATUS

Gail L. Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed Apr. 10, 1970, Ser. No. 27,226
Int. Cl. B05b 3/00
U.S. Cl. 239—189 **6 Claims**

A safety control system for shutting down a self-propelled sprinkling apparatus when the long line of spaced self-propelled towers, and thus the pipeline supported thereby, deviates by a given angle from a 90° relationship relative to the direction of movement of a driving means located at its end.

Valve means is suitably supported, whereby excessive leading or lagging deviation of the pipeline from the 90° relationship is

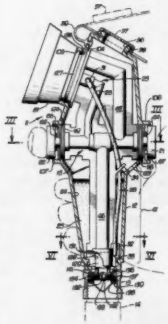


sensed by the valve means, to in turn actuate means which terminates the water input to the pipeline and shuts down the apparatus.

3,811,618
LIQUID CONCENTRATE AND WATER MIXING AND DISPENSING DEVICE

Klaus W. Gartner, and Peter Phillips, both of c/o Dream Flo Systems, Inc., 320 Union Bank Towers, 21515 Hawthorne Blvd., Torrance, Calif.

Filed Jan. 31, 1973, Ser. No. 328,301
Int. Cl. B05b 7/26
U.S. Cl. 239—312 **10 Claims**

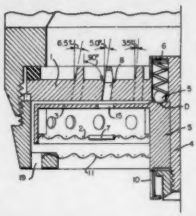


A hand held spray gun device adapted to be attached to a garden hose is provided for washing automobiles, garden furniture, pets, or spraying insecticide, disenfectant, etc. The body of the gun forms a reservoir for containing a liquid concentrate, such as soap, insecticide, disenfectant, etc. A pair of buttons are mounted on the gun for actuation by the thumb and index finger of the hand holding the gun body for selectively controlling a pair of fluid valves. Actuation of one button and its associated valve causes a discharge of a clean water shower-like rinsing spray, whereas operation of the other button discharges a strong jet of water and liquid concentrate useful, for example, as a cleaning jet with liquid soap. An aspirator device provides for adding and mixing the liquid concentrate with the water jet.

3,811,619
SPRAY PRODUCING DEVICE

Elie P. Aghnides, 795 Fifth Ave., New York, N.Y.

Filed June 26, 1972, Ser. No. 266,039
Int. Cl. E03c 1/084
U.S. Cl. 239—428.5 **17 Claims**

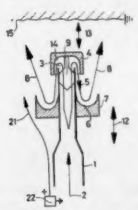


An aerator arranged to vary the velocity and aeration of the issuing jet of water having a casing with one or more screens, which may have holes in them, arranged thereon and rotatable to vary and/or eliminate the screen resistance for producing alternately different sprays wherein the jets may or may not be bubbly. A rotatable sealing device may be arranged to cover various holes in a diaphragm mounted on the upstream side of the aerator. The velocity and aeration of the output jets may be varied by manually adjusting either the rotatable screens or the sealing disc, or through cooperation of both.

3,811,620
HEAD FOR POWDER SPRAYING GUN

Otto R. Gebhardt, Fellbach, Germany, assignor to Firma Ernst Mueller KG

Filed Nov. 13, 1972, Ser. No. 305,734
Claims priority, application Germany, Dec. 20, 1971, 2163111
Int. Cl. B05b 1/26
U.S. Cl. 239—499 **11 Claims**



A head for powder spraying guns having placed in front of the exit orifice a deflection part which deflects the stream by 180°.

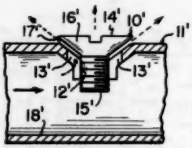
3,811,621
CONE SPRAY NOZZLE AND METHOD FOR MAKING THE SAME

Frank B. Augustine, 1135 McLaughlin Rd., Bridgeville, Pa.

Filed Jan. 30, 1973, Ser. No. 328,132
Int. Cl. B06b 1/26
U.S. Cl. 239—520 **5 Claims**

A cone spray nozzle is provided in a tubular member for carrying a fluid to be sprayed. The tubular member has at least one opening with a plurality of grooves, preferably symmetrical, around the periphery thereof. In each opening is positioned a dispersion member having a stem portion for fastening to the tubular member and a tapered head portion with an angular. typically conical surface for dispersing

the fluid. The fluid is ejected from the tubular member through the grooves to strike the tapered head portion, which in turn disperses the fluid in a generally conical spray pattern. Preferably the nozzle is made by punching the opening having the peripheral grooves with a die and inserting the dispersion member which is preferably a standard flat-head screw or rivet.

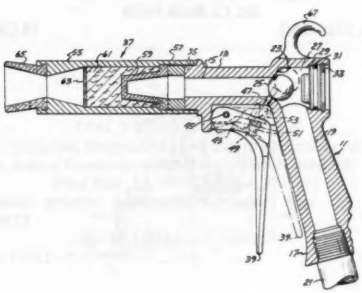


3,811,622

AIR BLOW GUN FOR CHIP AND DEBRIS CLEANING

Leland F. Blatt, 821 Lakeshore Rd., Grosse Pointe Woods, Mich.

Filed Nov. 6, 1972, Ser. No. 304,196
Int. Cl. B05b *7/02*
U.S. Cl. 239—526 **2 Claims**



An air blow gun for chip and debris cleaning comprises a barrel with a bore at its inner end opening into an enlarged chamber defining a valve seat. A hand grip has a bore joined to said chamber adapted for connection to a source of compressed air. A ball seal nested in said chamber seats on application of air pressure and a trigger operated pin on the barrel is adapted to unseat the ball seal, permitting the flow of compressed air through said barrel.

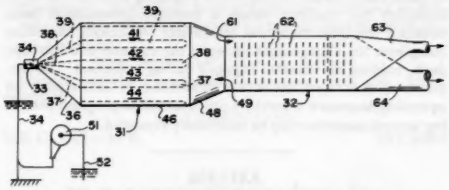
3,811,623

PROCESS AND APPARATUS FOR SEPARATION OF MINERAL ORE FROM GANGUE MATERIAL

Rolland Orin Speer, 2254 Wordside Ln. Apt. 6, Sacramento, Calif.

Filed Dec. 4, 1972, Ser. No. 312,232
Int. Cl. B02c *19/18*
U.S. Cl. 241—1 **19 Claims**

A process and apparatus for breaking the mechanical bonds between relatively interlocked and embedded mineral ore crystals and gangue crystals are disclosed. Severing the bonds between the crystals is effected by irradiating the rock material with ultrasonic waves in the range of about 300,000 to about 1,200,000 cycles per second. The frequency of the ultrasonic waves is selected to cause one of the ore and gangue crystals to vibrate at about a resonant frequency thereof until oscillations within the resonating crystals and a node condition at the interfaces between crystals causes fracturing of the rock material at about the interfaces. The separation of magnetite and rutile crystals, as contained in black sands material, by ultrasonic irradiation is particularly advantageous, and a magnetic concentrator and separator capable of separation of ferromagntic and non-ferromagnetic particles in a liquid medium is also disclosed.

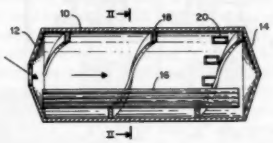


3,811,624

ROTARY TUBULAR CRUSHER

Jean Claude Giorgi, Lille, France, assignor to Fives Lille Cail, Paris, France

Filed Sept. 28, 1972, Ser. No. 293,044
Claims priority, application France, Sept. 29, 1971, 71.34998
Int. Cl. B02c *17/10*
U.S. Cl. 241—176 **6 Claims**



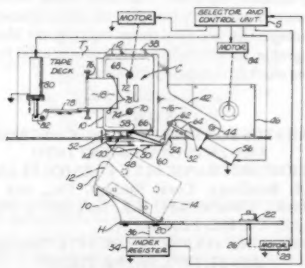
A rotary crusher comprises a cylindrical crusher drum rotating about a horizontal axis and inwardly projecting spacers occupying only a small part of the interior wall surface of the drum and disposed in planes inclined in respect of the drum axis or along curves so as to support and space the freely moving crushing rods in the drum at least at two points at opposite sides of the center of gravity of the rods.

3,811,625

MAGNETIC TAPE CASSETTE CHANGER

James W. Harford, Woodland Hills, and Stuart W. Jeffries, Simi, both of Calif., assignors to Cybrix Corporation, Chatsworth, Calif.

Filed Mar. 16, 1972, Ser. No. 235,204
Int. Cl. G11b *5/00*
U.S. Cl. 242—181 **9 Claims**



A cassette selector or changer is disclosed for operation with a plurality of cassettes and a magnetic tape deck. A

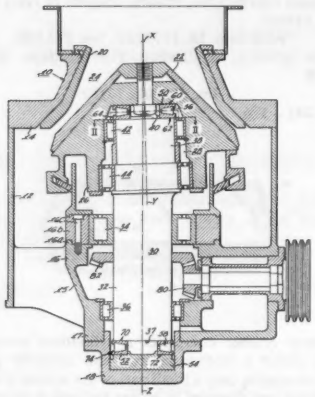
holder for cassettes is mounted for movement to a position at which a selected cassette may be grasped by a cassette-engaging structure. A drive (incorporating a geneva movement and an axial cam) rotates to move the engaging structure so as to transport the cassette along a multiple-dimensional path between the tape deck and the holder. A locking structure completes the engagement between the cassette and the tape deck, holding the cassette engaged during operation. The elements as described above are controlled to accomplish an operating sequence whereby a predetermined program involving several cassettes may be selectively executed.

3,811,626

GYRATORY CRUSHER WITH A PAIR OF INTERCHANGEABLE AXIAL THRUST BEARINGS

Robert H. Kemnitz, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 16, 1972, Ser. No. 307,050
Int. Cl. B02c *2/06*
U.S. Cl. 241—214 **6 Claims**



A gyratory crusher is disclosed having a central upright rotating shaft for supporting and camming a crushing head to gyrate relative to a surrounding stationary concave. An upper portion of the shaft cams the head to gyrate by being inclined relative to a lower and vertical portion of the shaft, with a central axis of the upper portion intersecting a vertical central axis of the lower portion at a point above the shaft. Radial bearings are mounted around the upper shaft portion between the shaft and the head and radial bearings are mounted around the lower shaft portion between the shaft and a hub defined by a frame. A pair of axial thrust bearings are provided, a first such bearing being on top of the shaft and a second such bearing being beneath the shaft. The axial thrust bearings have equal diameters which are less than the outer diameter of the radial bearings. The two axial thrust bearings are identical and interchangeable, and therefore only one size axial thrust bearing need be stocked in repair parts inventory.

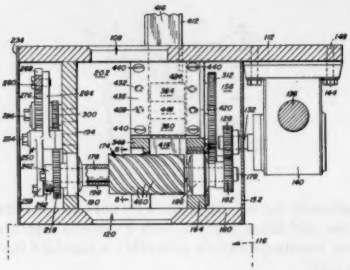
3,811,627

APPARATUS FOR INTRODUCING CONTROLLED AMOUNTS OF PIGMENT INTO THERMOMECHANICALLY FORMED PLASTIC

William B. Bradbury, Coral Springs, Fla., and Anton J. Rothschmitt, Mountainside, N.J., assignors to Plastic Molders Supply Co., Inc., Fanwood, N.J.

Division of Ser. No. 193,968, Oct. 29, 1971. This application July 31, 1972, Ser. No. 276,437
Int. Cl. B02c *18/44*
U.S. Cl. 241—281 **5 Claims**

A micrometer mixer is used to comminutize (shave) pigment bars and mix it with plastic pieces. The mixture is passed into a plastic articles forming machine. The micrometer mixer



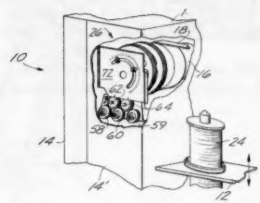
includes a rotary cutter against which a pigment bar is advanced at a controlled rate.

3,811,628

CONTROL MEANS FOR THE BUILDER MECHANISM OF TEXTILE YARN TWISTER OR LIKE MACHINE

Carey A. Glazener, Easley, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Nov. 7, 1972, Ser. No. 304,380
Int. Cl. B65h *54/28*
U.S. Cl. 242—26.1 **18 Claims**



The control means is characterized by versatility and reliability of operation, and in the disclosed embodiment includes proximity-type switching elements mounted within an end cabinet of the textile machine and movable by adjustable drive means along arcuate paths of travel about the axis of the shaft of the windlass of the builder mechanism.

3,811,629

PROCESS OF WINDING CORES

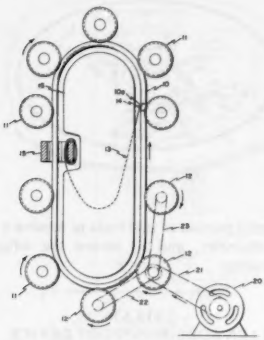
Richard Duane Sedgewick, R.F.D. No. 3, Rt. 16, Dover, N.H.

Continuation-in-part of Ser. No. 100,277, Dec. 21, 1970, abandoned. This application Oct. 25, 1972, Ser. No. 300,456
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 A **3 Claims**

In toroidal core winding apparatus, wherein the wire to be wound is stored as a helix within a hollow hoop and the hoop as it rotates through the core dispenses the wire from a point on the edge of its inner periphery; the hoop consists of a flexible hollow steel or plastic tube that can be maintained in the shape of a distorted circle; e.g., an elongated oval or racetrack shape, by guide wheels so that the hoop, for at least an appreciable portion of length on its periphery, moves in a straight line as it passes through the core, thus permitting the diameter of the tubing forming the hoop to be larger.

Significant advantages of this invention are that: (a) the straight run permits the wire to be drawn down tight on the core largely along its line of travel; and (b) the wire can be

wound on the core in either direction by simply reversing the direction of rotation of the hoop. Also, two strands of wire can



be payed out simultaneously from the hoop. This can be done in any conventional manner. For example, motor 20 can be a reversible motor.

3,811,630

COIL WINDING APPARATUS

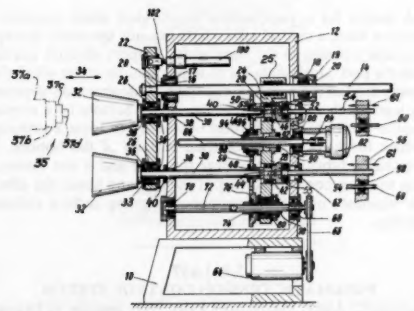
Willi Muskulus, Bergen-Enkheim, and Willi Kramer, Bad Vilbel, both of Germany, assignors to Balzer & Droll KG

Filed Mar. 22, 1972, Ser. No. 237,115

Claims priority, application Germany, Mar. 23, 1971, 2113873

Int. Cl. H01f 41/06; B21f 3/04

U.S. Cl. 242—7.11 **12 Claims**



A coil winding apparatus having one or more wire guides fixedly mounted on respective spindles which are mounted on a housing for axial movement relative thereto and for rotational movement about their axes. Each spindle includes a main front bearing in the vicinity of its wire guide and a main rear bearing in the housing. The main rear bearings are movable axially with the spindle but the front bearings are shiftable axially relative to the spindle.

3,811,631

WINDING TUBE CHANGING MECHANISMS

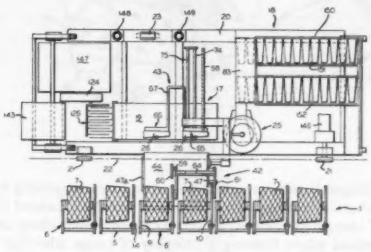
Manfred Mayer, Remscheid-Lennep, and Reinhard Naydowski, Remscheid, both of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed July 26, 1971, Ser. No. 165,414

Claims priority, application Germany, July 30, 1970, 2037826

Int. Cl. B65h 54/02

U.S. Cl. 242—18 R **10 Claims**



Apparatus for automatically feeding empty tubes, separately or in groups, to bobbin holders which pivot about a horizontal axis extending longitudinally of the machine and embodying at least one opening device adapted to travel into and out of engagement with the machine and by which, when moved into engagement with the machine, a bobbin holder is swung upwards into a prescribed position and a bobbin lever is swung laterally outwards; at least one loading device which is adapted to move into and out of engagement with the machine and which, when it is moved out of engagement with the machine, automatically takes up an empty tube by gripping it externally on the circumference, bringing taken-up empty tube into the region between the centering plates of the bobbin holder, which is swung upwardly into the prescribed position and opened by the opening device when the loading device is moved into engagement with the machine.

3,811,632

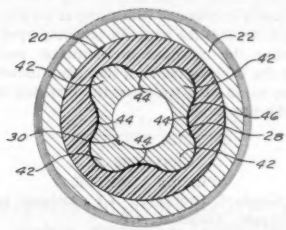
CORE CHUCKS

Kirk W. Bassett, 9 Knollwood Rd., Paxton, Mass.

Filed Oct. 1, 1971, Ser. No. 185,714

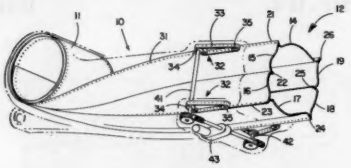
Int. Cl. B65h 17/02, 75/30

U.S. Cl. 242—46.4 **8 Claims**



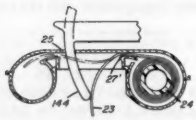
There is disclosed in the present specification a core chuck including a deformable outer sleeve of elastomer or equivalent material and a multi-lobar generally rigid internal actuator for expanding the sleeve as a result of relative angular motion in either direction between the sleeve and the actuator from their at-rest positions. The sleeve is non-cylindrical having a plurality of core engaging ridges and is compressible for initial insertion into the core.

3,811,633
TUBULAR EXTENDABLE STRUCTURE
Alan F. Cummings, Downey, and Gene G. Freeman, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 20, 1972, Ser. No. 299,568
Int. Cl. B65h *75/34, 75/48*
U.S. Cl. 242—54 A **12 Claims**



A collapsible tubular extendable structure comprising four walls wherein two oppositely disposed walls are formed by a pair of elongated ribbons, all of which are joined along their longitudinal edges forming a plurality of cusps allowing the structure to be folded flat and wound into a coil having the width thereof approximately equal to the diameter of the structure in an extendable mode. Four of the cusps are provided with means to permit positive control when the structure is being extended.

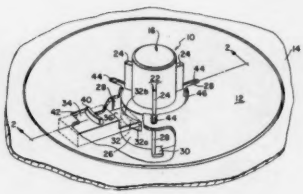
3,811,634
CARTRIDGE STRIPPING
Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1972, Ser. No. 234,797
Int. Cl. B65h *75/02, 5/28*
U.S. Cl. 242—55 **13 Claims**



A method and device for use in removing from a cartridge a strip of film that is interwound with a strip of backing material. The invention obviates the need for breaking open or otherwise mutilating the cartridge and, instead, contemplates withdrawing the backing material through a cartridge exposure aperture to, in turn, withdraw the film strip by contact with the backing material.

3,811,635
SPINDLE ADAPTER
William H. Goddard, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 15, 1973, Ser. No. 332,849
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.3 **9 Claims**

A spindle adapter for selectively accommodating reels having differing central driving core diameters. The spindle adapter, extending through a reel supporting plate, has a body mounted on a spindle drive shaft for rotation therewith and axially movable relative thereto. The body has differing diametral sections corresponding to the diameters of the central driving cores to be accommodated. A spring-biased latch is selectively engageable with the adapter body to position the adapter body axially relative to the plate to properly locate a



selected diameter portion of said body to receive a reel of particular core diameter, and to secure the adapter in the established position.

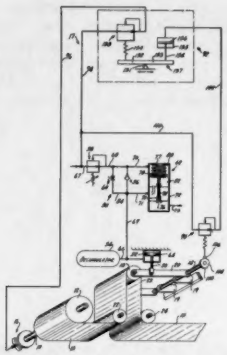
3,811,636
YARN BOBBIN SUPPORT DEVICE
Fred B. Muchnick, 71 N. 6th St., Kew Gardens Hills, N.Y.
Filed Dec. 5, 1972, Ser. No. 312,312
Int. Cl. B65h *49/00;* **D01h** *7/16*
U.S. Cl. 242—129.5 **5 Claims**

A holder for a yarn bobbin is provided which includes a concave base, a central post which extends upwardly through a central opening in the base and a support element coaxial with the post which includes an upper annular collar which fits closely around the post and a plurality of downwardly depending legs which are joined together at the bottom by a second annular collar and are bowed outwardly to form a gripping surface for engaging the internal surface of the bobbin. A stretchable fabric seat fits over the base and a nut screwed onto the post controls bowing of the legs and hence the effective diameter of the discontinuous gripping surface defined thereby.

3,811,637
PNEUMATIC TENSION CONTROL SYSTEM
Norman C. Abler, Menomonee Falls, Wis., assignor to Faustel, Inc., Butler, Wis.
Filed Aug. 24, 1972, Ser. No. 283,489
Int. Cl. B65h *25/22*
U.S. Cl. 242—75.43 **18 Claims**

A pneumatic dancer web tension control apparatus for maintaining tension in a web being wound onto or unwound from a spool mounted on a spindle on a winding stand having a signal responsive brake for controlling the speed of the spool and a shiftably mounted sensing roll or dancer positioned to response to the tension of the web, the control system including a pneumatic brake control circuit having a compensating

cam operatively connected to said sensing roll to respond to the movements of said sensing roll for generating a compensating signal for controlling said brake and a pneumatic



dancer load circuit connected to respond to the movement of said sensing roll to maintain a steady and uniform tension on the web.

3,811,638

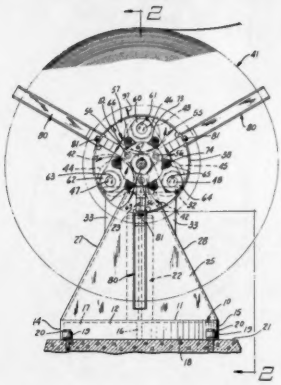
AUTOMATIC CENTERING REEL FOR COIL STOCK

Eilert F. Bruns, Birmingham, Mich., assignor to U.S. Industries, Inc., Detroit, Mich.

Filed Feb. 2, 1970, Ser. No. 7,806

Int. Cl. B21c *47/30*

U.S. Cl. 242—78.6 **15 Claims**



An automatic centering reel for a coil of strip stock including a base, a support means on said base, a rotatable strip stock coil support member rotatably mounted on said support means, said strip stock coil support member being provided with a plurality of eccentrically mounted rotatable coil holding members, said coil holding members being arranged to permit a coil of strip stock to be mounted thereover, means for rotating the eccentrically mounted coil holding members to expand them into gripping engagement with the inner diameter of the coil for gripping the coil to support it during an unreeling operation, and brake means operatively connected to said coil support member for selective braking of the reel.

3,811,639

PACKAGE FOR DISPENSING WIRE WITH PRESET TENSION

Anthony Jordan, Des Plaines, Ill., assignor to Chicago Magnet Wire Corporation, Elk Grove Village, Ill.

Filed Apr. 3, 1972, Ser. No. 240,427

Int. Cl. B65h *49/00, 49/18*

U.S. Cl. 242—129.8 **9 Claims**

A combination package for use by coil manufacturers required to wind coils of wire at relatively high speed and constant tension. The package comprises a cylindrical container having a spool of wire enclosed therein, the spool adapted to be maintained in a vertical disposition during the dispensing of the wire, the wire adapted to be stripped off of the upper end of the spool through a central passageway in the cover of the container. A wire tensioning device is fixedly connected to the upper end of the spool coaxial therewith, this device comprising a disc having a plurality of radially extending resilient filaments that protrude beyond the periphery of the upper end of the spool. The upper end of the spool is a conventional annular flange. As the wire is stripped off the spool in a rotary movement, it strikes and deflects the filaments while moving around the upper annular flange. The impedance to free stripping produces the tension in the wire, such tension being a factor of the wire gauge, the thickness and density of filaments and to a much lesser degree, the diameter of the discs and the speed of stripping of the wire. The manufacturer of the package furnishes the entire combination with preset tension capability to the coil manufacturer. Various structures of wire tensioning devices are disclosed including axially spaced multiple discs and rings of filaments installed on the interior of the housing overlying the upper flange end of the spool.

ERRATUM

For Class 242—181 see:
Patent No. 3,811,625

3,811,640

TAKEN-UP TAPE QUANTITY INDICATING SYSTEM

Michinori Nagahiro, Nishinomiya; Toshiomi Yabu, Kyoto; Hiroo Hosono, Hirakata, and Masaharu Ushihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 12, 1972, Ser. No. 297,072

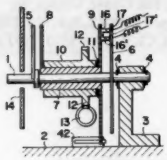
Claims priority, application Japan, Oct. 15, 1971, 46-95867

Int. Cl. B65h *59/38*; G03b *1/02*; G11b *15/13*

U.S. Cl. 242—191 **3 Claims**

A taken-up tape quantity indicating system for indicating the taken-up quantity of tape by an indicating pointer rotated

in association with the forward and reverse rotation of tape drive means. In the rewind operation, the reaching of zero



point by the indicating pointer is detected, and the rewind operation is stopped after a predetermined time delay from the detection of the reaching of the zero point.

3,811,641

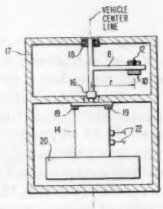
PRECESSION CONTROL DEVICE FOR A CLASS OF SPIN STABILIZED SPACE VEHICLES

Frederick W. Hopper, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed June 18, 1971, Ser. No. 154,378

Int. Cl. B64g 1/00

U.S. Cl. 244—1 SA **8 Claims**



A system for controlling the precession of spin stabilized space vehicles, particularly those space vehicles wherein the spin axis is the principal axis of least moment of inertia. An initial precession of a spin stabilized vehicle excites various energy dissipation mechanisms causing a decrease in the vehicle's kinetic energy which results in a progressive increase in the precession angle. Excessive precession causes instability and must be controlled. Precession is controlled according to this invention by providing the space vehicle with a system which includes a sensor and control unit, the sensor providing output signals proportional to the precession angle, the control unit being energized in response to a sensor signal indicating an excessive precession angle. Energization of the control unit results in a slow decrease in the precession angle by causing kinetic energy to be returned to the vehicle.

3,811,642

COLLAPSIBLE PROPELLER FOR MAN-POWERED GLIDER AIRCRAFT

Alfred G. B. Prather, P.O. Box 53, Lanham, Md.

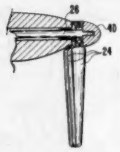
Division of Ser. No. 188,289, Oct. 12, 1971, Pat. No. 3,750,981. This application May 9, 1973, Ser. No. 358,475

Int. Cl. B64c 31/04

U.S. Cl. 244—16 **1 Claim**

The aircraft wings have means for varying their camber and include a fan-like tail section hinged to the rear of a rigid frame surrounding the pilot's space between the inner ends of the side wing sections, in substantially the same plane therewith, a unicycle being fixed to said rigid frame to provide a seat for the pilot. A collapsible propeller is mounted on a shaft extending forwardly from a bearing on the front of said rigid frame, and is driven by a chain or belt drive from a sprocket or pulley on the wheel of the unicycle, the blades of the propeller being keyed to the propeller shaft through limited annular slot and key connections between adjacent blade bearings, to spread the blades to their proper angular spacing whenever the shaft is driven, and to return them to a common vertical hanging position so as to reduce their drag during gliding operations whenever no power is applied.

The pilot sits on the unicycle seat, drops a yoke harness over his shoulders which is operatively connected to control the inclination and twist of the hinged tail section, whereby the



shifting of his body forward, lifts the tail section to cause an increase in the angle of attack of the side wing sections, and by shifting his body rearward the tail section is lowered to decrease the angle of attack, and if he moves his body from side to side he can twist the tail section accordingly. After placing this yoke over his shoulders, the pilot inserts his arms through openings in the inner ends of said wing sections and grasps the handles of the correspnding hand control plates which are operatively connected to control the chambers of the side wing sections, the warping of the outer ends of these sections and the spread of the fan-like tail section.

3,811,643

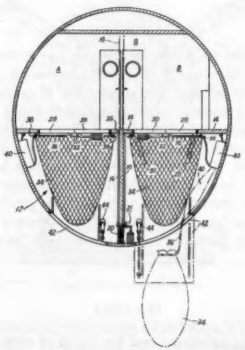
ANTI HIJACKING SYSTEM FOR AIRCRAFT

Gustano A. Pizzo, 34-20 74th St., Jackson Heights, N.Y.

Filed Nov. 2, 1972, Ser. No. 303,094

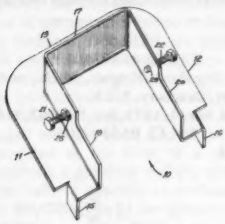
Int. Cl. B64d 25/08

U.S. Cl. 244—137 P **1 Claim**



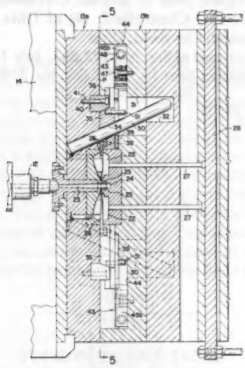
An anti hijacking system for an airplane to be operated during flight. A partition or barrier located immediately aft of the pilots cabin is adapted to be raised dividing the aft section longitudinally into port and starboard areas, the floors of which are dropped on command to lower the hijacker into a capsule in the belly of the plane. The capsule is releasable through opened bomb bay doors having attached thereto a parachute for safely returning the hijacker within the capsule to earth.

3,811,644
PIPE HANGER
Warren J. Arnault, Main St., Raymond, N.H.
Filed Nov. 22, 1972, Ser. No. 308,705
Int. Cl. F16l 5/00
U.S. Cl. 248—56 7 Claims



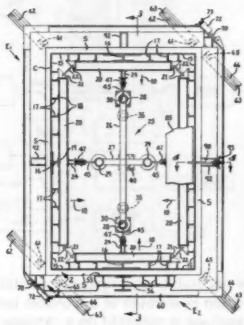
A hanger in the form of a U-shaped bracket for waste lines in buildings having concrete plank floors. Flanges are provided toward the closed end of the U for supporting the bracket on top of concrete planks siding the waste line opening. Downwardly extending tabs at the open end of the U extend between the planks to prevent the U from opening and upstanding portions of the bracket are provided with fastening devices to secure a waste line extending through the bracket and prevent downward movement thereof.

3,811,645
SLIDE RETAINER AND POSITIONER
Karl K. Feist, 4325 Strasser St., N.W., North Canton, Ohio
Filed Jan. 5, 1973, Ser. No. 321,204
Int. Cl. B29c 7/00
U.S. Cl. 249—68 8 Claims



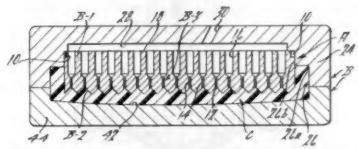
A slide retainer and positioner for molds having at least one cam-actuated slide for pulling a core element laterally of the mold cavity as the mating mold parts are opened, said slide retainer and positioner being embodied wholly within the mold at all times and adapted to yieldingly clamp the slide in cam-aligned position only when the mold is opened without restraining the opening and closing movement of the slide.

3,811,646
FORM FOR PORTABLE CONCRETE BUILDING MODULE
Robert W. Beasley, Tualatin, Oreg., assignor to Ted Nelson Company, Portland, Oreg.
Continuation of Ser. No. 150,147, June 4, 1971, abandoned, which is a division of Ser. No. 781,554, Dec. 5, 1968, Pat. No. 3,614,054. This application Nov. 17, 1972, Ser. No. 307,621
Int. Cl. B28b 7/30
U.S. Cl. 249—144 6 Claims



The form is used for casting wall portions of a single rectangular room as a modular unit to be assembled with other such units and floor and ceiling structure to build homes, apartment houses and other buildings. The form comprises a core form and two exterior forms. The core form is contractible in all directions for stripping. The two exterior forms are L-shaped, each embracing one end wall and one side wall of the room, these forms being supported by trolleys on diagonal tracks for movement away from each other in stripping.

3,811,647
VENTING OF ELECTROFORM REFLEX INSERTS BY LASER DRILL
Frank A. Pink, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 28, 1972, Ser. No. 266,887
Int. Cl. B29c 1/14
U.S. Cl. 249—160 7 Claims

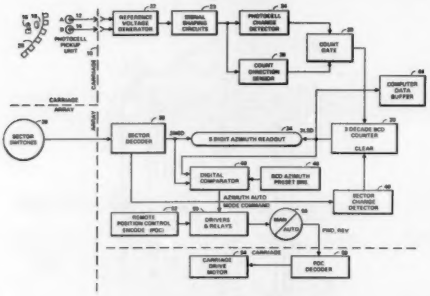


A unitary electroplated reflex insert preferably made of high nickel alloy, useful in completing a molding assembly for making plastic retrodirective reflectors. The insert has a patterned surface contoured with a plurality of multi-faceted cube-corner projections arranged with adjacent edges of commonly joined facets defining female apices; microbores are constructed through said female apices such as by laser beam drilling to provide a venting system.

3,811,648
AZIMUTH READOUT SYSTEM

Donald E. Ream, Jr., San Diego, and Gregory A. Brown, Sante, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 9, 1973, Ser. No. 377,500
Int. Cl. H01j *39/12*
U.S. Cl. 250—578 **7 Claims**

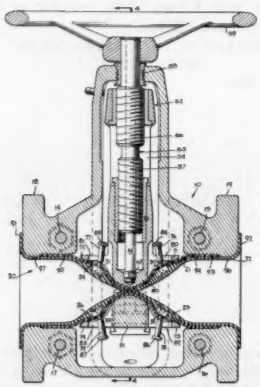


A system for accurately and remotely positioning and displaying the position in azimuth of a movable instrumentation package. The package is mounted on a carriage that is driven by an electric drive motor around a circular track. A light beam directed towards two photo cells is broken by a notched metal strip as the carriage moves along the track. The pulses generated by the photo cells are counted with the counter being reset at every ten degree sector to cancel any small accumulated azimuth error.

3,811,649
CONSTRICTABLE TUBE VALVE WITH PLURAL WALL TUBE

Irving D. Press, West Orange; Helm A. Rink, North Haledon, and John K. Menzel, Orange, all of N.J., assignors to Resistoflex Corporation, Roseland, N.J.

Filed July 20, 1972, Ser. No. 273,388
Int. Cl. F16k *7/06*
U.S. Cl. 251—8 **16 Claims**

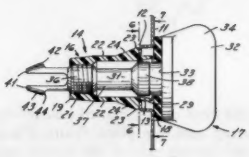


The tube of a constrictable tube valve is formed with a plural wall of which the outermost wall is shorter than the innermost wall. A metal housing with internal surfaces of varying perimeter or girth closely fits around the separate walls with the innermost wall extending outside the housing where it is radially flared over the faces of flanges on the housing. A plurality of connecting elements pass through the outermost wall of the tube and connect with the innermost wall. The free ends of the connecting elements are coupled to one or the other of two compressor members which exert closing pressure upon the tube. A separate metal fork having its tines inserted in a corresponding base on the innermost tube wall serves to anchor the respective connecting element thereto.

3,811,650
VALVE ASSEMBLY

David C. Dehar, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1973, Ser. No. 347,964
Int. Cl. B65d *41/04*
U.S. Cl. 251—144 **12 Claims**



A valve assembly suitable for use as a draincock in an automobile radiator. The valve elements can be preassembled and installed in a stamped opening in a radiator tank by simple snap-in action. The assembly includes three elements: (1) an insert, (2) a threaded plug, and (3) a gasket that forms a seal between the plug and wall of the radiator tank.

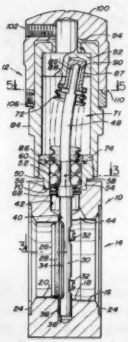
ERRATUM

For Class 251—331 see:
Patent No. 3,812,398

3,811,651
BELLOWS SEALED BUTTERFLY VALVE

Bernard J. Gallagher; Earl D. Shufflebarger, both of Mentor; David M. Simko, Parma Heights; Richard J. Nedvick, Brooklyn Heights; John R. Boylan, Cleveland Heights, and Oliver L. Danko, Chesterland, all of Ohio, assignors to Nupro Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 272,561, July 17, 1972. This application June 14, 1973, Ser. No. 370,001
Int. Cl. F16k *41/10*
U.S. Cl. 251—335 B **6 Claims**



The specification and drawings disclose a valve particularly suited for use in critical vacuum systems. The valve shown

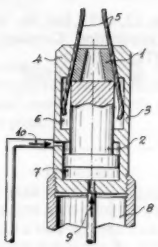
comprises a body having a through flow passage of generally circular cross-section. A butterfly valve disc is positioned in the passage and has an outer periphery adapted to close the passage when rotated to a position transverse to the axis of the passage. A rotatable operating stem is connected to the valve disc and extends outwardly through the body. Joined with the operating stem is an actuating stem which has an outer end portion inclined at an angle relative to the axis of the operating stem. A bellows assembly encloses the actuating stem with a lower portion of the assembly joined to the body. The bellows assembly includes a flexible, gas impervious bellows member which encloses the actuating stem and is inclined throughout a portion of its length at an angle corresponding to the angle of the inclination of the outer end portion of the actuating stem. Additionally, the outer end of the bellows is rotatably engaged with the outer end of the actuating stem. Means are provided in the form of a rotatable housing member for applying a generally radially acting force to the outer end of the bellows assembly to produce rotation of the operating stem and deflection of the bellows without torsional loading of the bellows.

3,811,652

SYSTEMS OF ANCHORAGE TO THE TRACTION JACK OF REINFORCEMENTS TO BE POST-TENSIONED

Ricardo Barredo De Valenzuela, Raimundo Fernandez Villaverde 45, Madrid 3, Spain

Filed May 4, 1972, Ser. No. 250,192
Claims priority, application Spain, Feb. 8, 1972, 399570
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **3 Claims**



The present invention relates to an improvement in an anchoring device for post-tensioning reinforcement elements by a cooperating traction jack, and a conical wedge and mating interior conical ring of the traction jack. In accordance with the invention, a truncated conical wedge is solidly united to the head of a hydraulic piston, the cylinder of which has fixed to its front end an interior conical ring acting in conjunction with the wedge in order to fix the terminal ends of the rods or cables. The ends of the rods or cables enter into the anterior chamber of the body of the cylinder part of the body of the cylinder has an external screw-thread to which there is directly coupled the front extremity of the body of the traction jack.

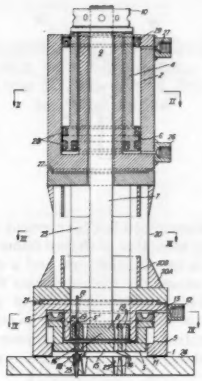
3,811,653

FLUID OPERATED JACKS

Gunter Persicke, Dartford, England, assignor to Christiani and Nielson Limited, London, England

Continuation-in-part of Ser. No. 739,106, June 21, 1968, abandoned. This application July 31, 1970, Ser. No. 59,905
Claims priority, application Great Britain, July 31, 1969, 38551/69
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **4 Claims**

A jacking device for stressing or tensioning elongated reinforcing elements in concrete structures comprising an anchor homing jack and a stressing jack assembled in axial alignment, each jack having an annular cylinder surrounding an element to be stressed and an annular piston sliding in the cylinder, a tensioning member extending through both jacks and having



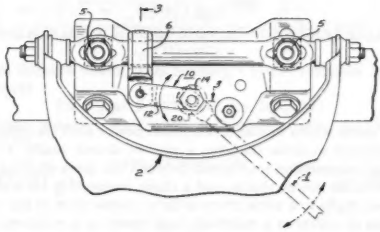
means for engagement by the piston of the stressing jack and means associated with the piston of the homing jack to clamp the reinforcement elements after stressing to enable the jacks to be used for further stressing of the elements.

3,811,654

CAMBER AND CASTER ADJUSTMENT TOOL

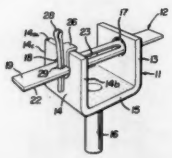
John H. Castoe, Los Angeles, Calif., assignor to Branick Manufacturing Company, Fargo, N. Dak.

Filed Dec. 7, 1972, Ser. No. 313,089
Int. Cl. B66f *3/00*
U.S. Cl. 254—131 **8 Claims**



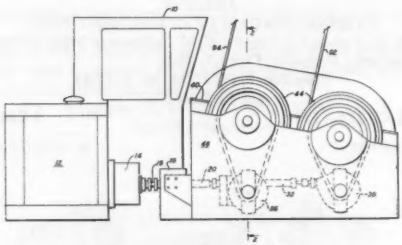
A vehicle camber and caster adjustment tool including a hook member for engaging the inner shaft of a wheel assembly to be adjusted wherein the hook member is pivotally mounted to a force transmitting element which is adapted to be retained on the frame of the vehicle. The force transmitting element further includes an upper socket wrench receiving projection which permits manual force to be applied to the hook by rotation of the force transmitting element in an appropriate direction. The novel design of the tool of the invention achieves a significant application of force to the shaft supporting the wheel assembly because of the offset position of the hook with respect to the force transmitting element.

3,811,655
TENSIONING DEVICE
Howard F. Foster, 4500 Cavendish Cir., Fort Lauderdale, Fla.
Filed Mar. 29, 1973, Ser. No. 346,019
Int. Cl. B66d 1/00
U.S. Cl. 254—161 8 Claims



A device for tensioning a flexible element, such as a strap or cable. The device includes a U-shaped frame with aligned, circular openings in its opposite legs, and a slotted tensioning plate extending across the space between the legs of the U-shaped frame and rotatably received in said openings. A locking member is removably inserted to hold the tensioning plate against rotation. The locking member may be inserted and removed without shifting the tensioning plate axially.

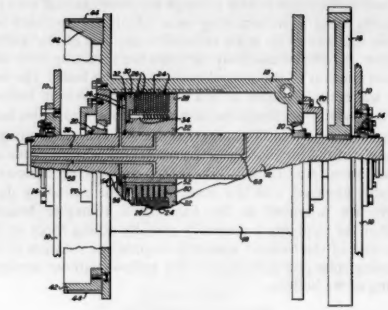
3,811,656
CABLE WINCH HAVING VARIABLE RATIO INTERLOCK
Charles J. Hoover, Box 173, Mill City, Oreg.
Filed June 26, 1972, Ser. No. 266,073
Int. Cl. B65d 1/26
U.S. Cl. 254—184 6 Claims



A cable winch having a reversible power shift transmission connected to drive shafting, a pair of driven shafts, a two-speed transmission interposed between the drive shafting and each of the driven shafts, and a chain connecting each of the driven shafts to a cable drum so as to enable each of the cable drums to rotate at a relatively high speed or a relatively low speed.

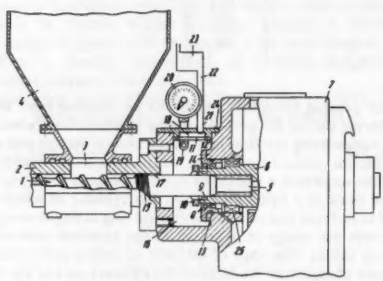
3,811,657
CABLE WINCH HAVING A CLUTCH INCLUDING FRICTION DRIVE AND COOLING MEANS
Charles J. Hoover, Box 173, Mill City, Oreg.
Continuation of Ser. No. 217,143, Jan. 12, 1972, abandoned.
This application Aug. 15, 1973, Ser. No. 388,496
Int. Cl. B66d 1/00
U.S. Cl. 254—187 5 Claims

A cable winch having a clutch formed of clutch plates for coupling a drum to a rotatable shaft, a mechanism for selectively operating the clutch under a high force wherein the drum and the shaft are locked by the clutch plates for unitary rotation and a low force wherein slippage occurs between the clutch plates and thus between the drum and the shaft, and a



mechanism for regulating the supply of oil to the clutch plates for cooling the clutch plates and preventing chatter.

3,811,658
EXTRUDER FOR PROCESSING PLASTICS AND RUBBER
Horst Heidrich, Hochbergweg 19, 792 Heidenheim-Brenz, Germany
Filed Jan. 22, 1973, Ser. No. 325,335
Claims priority, application Germany, Jan. 24, 1972, 2203759; Jan. 24, 1972, 2203760
Int. Cl. B01f 7/02
U.S. Cl. 259—191 9 Claims



An extruder provided with an intermediate chamber between the screw cylinder and the gear drive unit with the screw shaft extending through the chamber to a vacuum sealed driving connection to the gear drive unit, and with the intermediate chamber communicating with the screw cylinder and hopper bore by a small annular clearance between the screw shaft and the cylinder wall. The usual shaft seals are eliminated and are instead installed at the end of the intermediate chamber adjacent the gear drive unit and avoids seal contamination while making possible seal lubrication. When additives are employed, the tight seal off of the intermediate chamber from the gear drive unit is assured by using seals

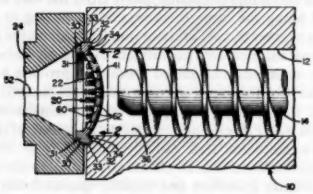
designed to correspond to the properties of the additive to be processed. The intermediate chamber is provided with a pressure line connection to an apparatus for supplying liquid or gaseous additives which can be introduced and quantitatively metered at the beginning of the screw to thereby accomplish uniform conveying of the additive over the circumference of the screw to make the entire length of the screw available for mixing the additive with the plastic. The intermediate chamber may alternatively be provided with a vacuum line connection for degasifying the feed from the supply hopper while minimizing suction in the screw cylinder toward the ejection end of the screw.

3,811,659

ARCHED STRAINER PLATE FOR PLASTIC AND LIKE MATERIAL

Challen E. Taylor, Waukegan, and John H. Stanley, Libertyville, both of Ill., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 15, 1972, Ser. No. 234,752
Int. Cl. B01d *35/28*
U.S. Cl. 259—193 **6 Claims**



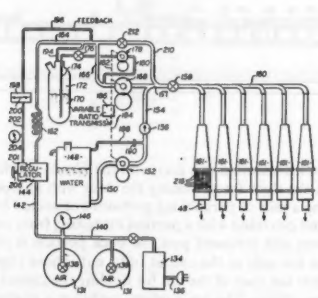
This invention relates to strainers and particularly to strainers for straining plastic, visco-elastic, or highly viscous, rubbery materials and more particularly to a strainer having an improved breaker plate.

3,811,660

EQUIPMENT FOR MAKING FOAM FOR DUST SUPPRESSION AND OTHER PURPOSES

Howard W. Cole, Jr., 12 Vale Dr., Mt. Lakes, N.J.

Continuation-in-part of Ser. No. 91,371, Nov. 20, 1970, abandoned. This application Mar. 30, 1973, Ser. No. 346,286
Int. Cl. A62c *5/04*
U.S. Cl. 261—18 B **9 Claims**



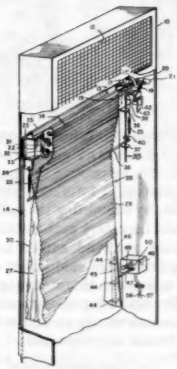
This system generates foam which is discharged into broken masses of coal or other dusty products at the locations where the coal is broken loose from a mine vein, or at conveyor or other transfer points for any dusty material. Nozzles discharge the foam under conditions that cause the foam to penetrate the dusty mass of material. The amount of foam required is regulated automatically by the weight of the coal or other material. The system also functions as a fire suppression system which can be automatic with fire detector means located at places to be protected. The foam generator maintains a constant ratio of air to water, but the apparatus is adjustable to change the ratio when desired.

3,811,661

HUMIDIFYING APPARATUS

James C. Procter, R.R. No. 1, Seymour, Ind.

Filed May 22, 1972, Ser. No. 255,534
Int. Cl. B01f *3/04*
U.S. Cl. 261—26 **15 Claims**



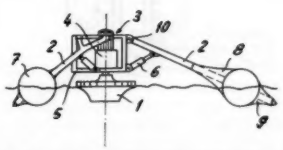
A humidifier in which an air-permeable, water-holding sheath, preferably of inverted bag-like form, is resiliently suspended in a substantially vertical air stream for vertical movement in response to variations in the weight of water held thereby, controls for supplying water to the sheath and for inducing and maintaining the air stream being actuated by such movement of the sheath. A humidistat may be provided to prevent water delivery when environmental humidity exceeds a predetermined value.

3,811,662

AERATION DEVICE FOR THE SURFACE AERATION OF LIQUIDS

Joseph Richard Kaelin, Villa Seeburg, CH-6374-Buochs, Switzerland

Filed Sept. 5, 1972, Ser. No. 286,206
Claims priority, application Switzerland, Sept. 6, 1971, 13012/71
Int. Cl. B01f *3/04*
U.S. Cl. 261—91 **19 Claims**



The aeration device of the invention has supporting legs which, in the rotor-bearing unit end, are forked and are hinged to a cage-like supporting frame which surrounds the rotor-bearing unit, whereby the height of the latter can be adjusted by adjusting means provided on or adjacent the axis of the supporting legs.

3,811,663

INTIMATE GAS-LIQUID CONTACT METHOD AND APPARATUS

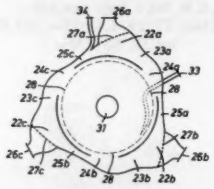
Jacques Sterlini, Paris, France, assignor to Societe Anonyme: Compagnie Electro-Mecanique, Paris, France

Filed Jan. 26, 1971, Ser. No. 109,767

Claims priority, application France, Jan. 27, 1970, 70.02814

Int. Cl. B01f *3/04*

U.S. Cl. 261—151 13 Claims



A process permitting the intimate contact of a gaseous medium and a liquid medium obtaining a considerable economy of investments with respect to the prior technique. The process generally consists in forming a very fine emulsion of the gas in the liquid, by submitting the latter to high velocity movement, the initial necessary accumulation of kinetic energy of said liquid on the one hand, and the continuous compensation of losses by friction of said liquid on the other hand being obtained by means of a thermodynamic cycle described by the gas itself. The invention is applicable to all processes for transfers of mass and energy as well as chemical reactions wherein gases and liquids are contacted.

3,811,664

VEHICLE SUSPENSION UNITS

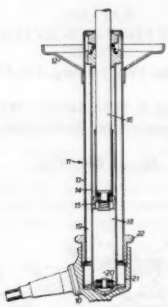
Ralph William Spinks, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 29, 1971, Ser. No. 193,628

Claims priority, application Great Britain, Nov. 17, 1970, 54610/70

Int. Cl. B60g *13/06*

U.S. Cl. 267—66 7 Claims



A vehicle suspension unit comprises a housing tube with an increased diameter lower end portion which can be releasably secured in a corresponding recess in a stub axle. The increased diameter portion provides a shoulder which, in use is abutted by an annular retaining member which surrounds, the housing tube to retain the increased diameter portion within the socket.

3,811,665

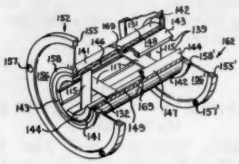
FLEXURAL PIVOT WITH DIAPHRAGM MEANS

Frederick A. Seelig, New Hartford, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 5, 1972, Ser. No. 286,369

Int. Cl. F16f *1/18*

U.S. Cl. 267—160 9 Claims



A flexural pivot device having a pair of flat crossed springs, each of the crossed springs having at least one side projection at each end extending perpendicularly from the side end of its spring and being the same thickness as the spring to provide connecting segments, two arcuate quadrant elements and two divided quadrant elements positioned alternately between the connecting segments and joined thereto to provide a tubular assembly having two semi-circular members interconnected by crossed flat springs and spaced at the lengthwise edges thereof, first outer sleeve means connected to one of the semi-circular-like members and radially spaced from the other member, second outer sleeve means connected to the other of the semi-circular members and radially spaced from the first sleeve member, either the first outer sleeve means and/or the second outer sleeve means having flexible diaphragm means fixedly secured thereto thereby allowing relatively low axial and torsional stiffness while permitting relatively high radial or shear stiffness.

3,811,666

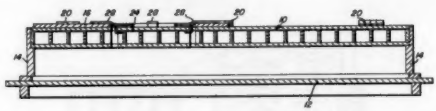
APPARATUS FOR INSTALLING INSERTS IN DOORS

John L. Rogers, Tunnel Hill, Ga.

Filed Sept. 15, 1972, Ser. No. 289,363

Int. Cl. B25b *5/00*; B27b *29/00*; B27m *3/00*

U.S. Cl. 269—9 3 Claims



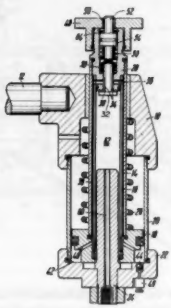
An insert is installed in a door and the like by cutting a portion from the door for providing the door with an opening. A clip having a pair of parallel leg portions connected by a back portion and provided with a portion extending from one of the leg portions and arranged past the back portion is placed on all but the last side of the cutout to be cut. These clips are arranged near the start of the cut for holding the cutout in place during the cutting. The leg portions embrace a portion of the cutout, and the extending portion rests on a surface of the door. The cutout and clip are removed from the opening once the cutting is completed, and an insert is held in position in the opening by a support member having a pair of spaced, parallel, planar members abutting the insert and a supporting surface spaced from the door. The insert is now secured to the door.

3,811,667

PNEUMATIC HOLDING DEVICE

Max Mayer, Heuweg 16, 7911 Burlafingen, Germany

Filed Sept. 15, 1972, Ser. No. 289,572
Claims priority, application Germany, June 16, 1972, 2229538
Int. Cl. B25b 1/18; F01b 15/02
U.S. Cl. 269—23 21 Claims



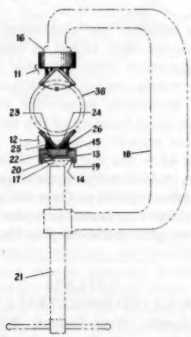
A holding or clamping device of the type comprising two pressure cylinders adapted to produce a first preliminary weak holding force and subsequently a greater holding force is provided with a sensor pin adapted to bring about a switch over from operation of the first cylinder to the second cylinder. The sensor pin is so loaded that it will only bring about the switching over when it strikes a hard object such as metal but is not actuated when it comes into contact with the human hand.

3,811,668

PIPE HOLDING ATTACHMENT FOR C-CLAMPS AND VISES

James I. Kotter, 3120-49th St., Metairie, La.

Filed Mar. 22, 1971, Ser. No. 126,471
Int. Cl. B25b 1/24, 5/16
U.S. Cl. 269—258 2 Claims



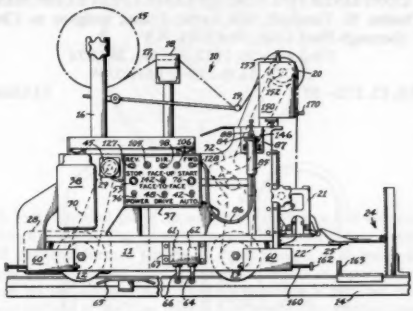
Utilization and attachment of two V-type units, oppositely positioned onto a conventional C-clamp, a machinist's vise, a woodworker's vise and other clamping devices, enables positive clamping of cross-sectionally curved objects, such as pipe and tubing. Two cross-sectionally curved objects may be positioned and positively held at any angle with respect to each other by use of alternate embodyment of invention.

3,811,669

ELECTRICALLY CONTROLLED CLOTH SPREADING MACHINE

Robert W. Benson; James Ronald Chapman; Robert G. Reed, and Hoyt L. Smith, all of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Division of Ser. No. 857,509, Sept. 12, 1969, Pat. No. 3,663,006.
This application Feb. 25, 1972, Ser. No. 229,603
Int. Cl. B65h 29/46
U.S. Cl. 270—31 4 Claims



An electrically driven and controlled cloth spreading machine including means for reversing the travel of the machine, means for controlling the high and low speeds of the machine, means for causing the machine to fail safe at low speed upon power failure and open circuit conditions caused by different changes in function of the machine.

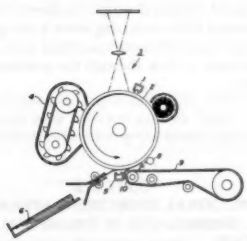
The machine is also provided with various selective controls for manual, semi-automatic and automatic operation of the machine, and for spreading cloth face-to-face, face-up or face-down.

3,811,670

ELECTROSTATOGRAPHIC APPARATUS WITH AIR BAFFLE

Noriyuki Inoue, Ebina, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed May 21, 1973, Ser. No. 362,597
Claims priority, application Japan, June 19, 1972, 47-71376
Int. Cl. B65h 29/56
U.S. Cl. 271—80 9 Claims



In an electrostatographic apparatus wherein toner images are transferred from a first imaging support to a second flexible support with a transfer corona generator, past which said second support is transported on the first support, and wherein an air puffer assists in peeling the second support from the first support by air injection against the second support; the improvement comprising an air baffle positioned

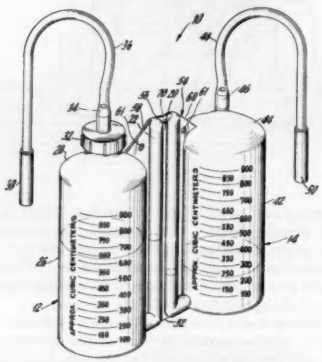
between the transfer corona generator and the puffer for impeding the air from said puffer from deflecting the second support adjacent the transfer corona generator, thereby reducing toner smearing.

3,811,671

CONTAINER FOR FORCED EXPIRATION EXERCISES

Charles H. Turnbull, Old Lyme, Conn., assignor to Cheseborough-Pond's Inc., New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,874
Int. Cl. A63b *23/00*; A61b *5/08*
U.S. Cl. 272—57 F **12 Claims**



A unitary, self-supporting, semi-rigid container for forced expiration exercises having a pair of compartments for containing liquid into which a patient seeking respiratory stimulation can forceably blow, a web between and integrally joined to the compartments providing rigidity for the container, and a conduit in the web for transferring the liquid from one compartment to the other in response to a patient forceably blowing into the liquid filled compartment.

The conduit includes a pair of spaced channels each connected at its lower end to the adjacent compartment and at its upper end to an interconnecting restriction for controlling the quantity of liquid flowing through the downstream channel to prevent siphoning from occurring when a recuperating patient blows into the liquid filled compartment and causes liquid in that compartment to flow through the conduit into the other compartment.

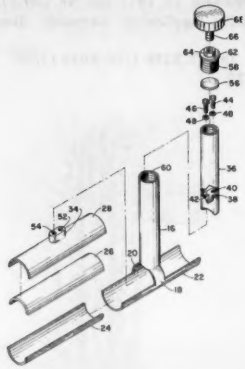
3,811,672

FRICTIONAL EXERCISING APPARATUS

Clarence C. Simmons, 1722 N. Winona Blvd., No. 203, Los Angeles, Calif.

Continuation of Ser. No. 50,502, June 29, 1970, abandoned.
This application Apr. 12, 1973, Ser. No. 350,442
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 R **7 Claims**

An exercising apparatus to be operated with push-pull movements by a single human being, a first grasping means fixedly located substantially at a right angle to a tubular elongated member, a second grasping means also located substantially at a right angle to the elongated member and being pivotally and longitudinally movable thereupon; an adjusting device associated with the second grasping means operates a



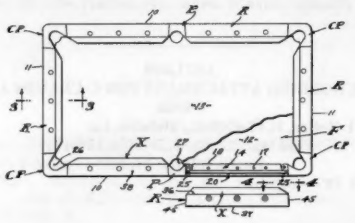
braking means to vary the frictional force of the connection between the second grasping means and the longated member.

3,811,673

REPLACEABLE GAME TABLE RAIL

Raymond J. Baker, 3136 Yale Ave., Marina Del Rey, Calif.

Filed June 13, 1972, Ser. No. 262,339
Int. Cl. A63d *15/06*
U.S. Cl. 273—9 **20 Claims**



A game table wherein the cushion rails are replaceably removable for repair, and keyed in operating position by cooperative engagement with the table and corner and/or pocket member configurations which provide interface engagements that accurately locate the cushioned rails. To facilitate such accurate locating of the rails, the end faces of the corner and/or pocket members are upwardly and outwardly divergent while the end faces of the rails are complementary thereto. Additionally, a cleat extends between the pocket and/or corner members. Over this cleat is positioned a rabbet, which rabbet is recessed into the bottom of the rails and is of greater heighth and width than the cleat.

3,811,674

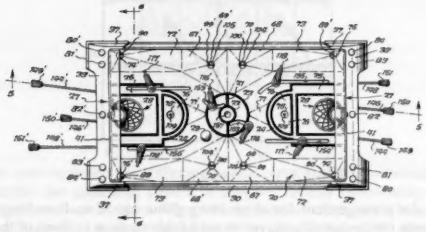
SIMULATED BASKETBALL GAME

Nicholas D. Trbovich, West Seneca; William P. Robinson, Lockport, and Eugene R. Trunzo, North Tonawanda, all of N.Y., assignors to Servotronics, Inc., Buffalo, N.Y., by said Robinson and Trunzo

Filed Sept. 27, 1971, Ser. No. 183,861
Int. Cl. A63f *7/06*
U.S. Cl. 273—85 E **16 Claims**

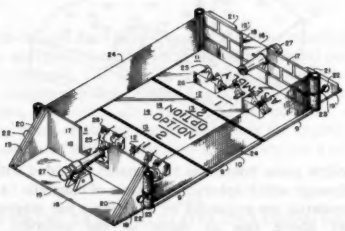
A game board having an upper surface with a basketball court displayed thereon on which a plurality of ball deflecting player pieces are movable under the control of the partici-

pants of the game to strike a ball and direct it in a desired direction. A plurality of wells or recesses having circular openings are provided on the board surface. Plungers are movable through these openings under the control of the participants to strike the ball when lodged in such openings to propel or catapult the ball toward an opponent's basket. Each



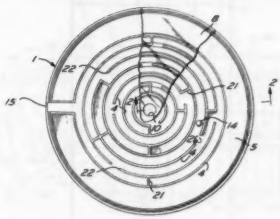
of the plungers is mounted so that it may be translationally adjusted along the board surface relative to the associated opening thereof. The plungers are further formed of a ductile plastic material so that they may be bent to finely adjust the lateral disposition of each plunger relative to its associated opening.

3,811,675
PROJECTOR, FIELD, AND TARGETS
Abraham M. Torgow, 185 E. 206th St., Bronx, N.Y.
Filed Apr. 6, 1972, Ser. No. 241,696
Int. Cl. A63b *7/02*
U.S. Cl. 273—101 **1 Claim**



A game combining strategy and skill has a game playing surface with two ends, the surface being marked off from each end in an assembly zone, numbered advance zones, and an option zone. Movable playing pieces are two sets of target symbols, usually representing soldiers, and shielding blocks. Each player has a shooting means operated from his end of the game surface with which he may knock down shielding blocks or soldiers of the other player. The shooting means is preferrably a spring operated cannon having a barrel, an axial rod in the barrel, an impulse plunger disposed about the rod, a compression spring urging the plunger towards the muzzle of the barrel, means locking and releasing the plunger in a rear position, and a projectile containing an axial bore disposed about the rod and ejected on release of the plunger. Emplacements at each end of the game surface or board have end walls through which the cannon project. Side nets extending between the emplacements contain projectiles on the playing surface.

3,811,676
FOOT OPERATED GAME APPARATUS
Sherry F. Greenberg, 1525 Redwood Ln., Wyncote, Pa.
Filed Jan. 10, 1973, Ser. No. 322,448
Int. Cl. A63f *7/16*
U.S. Cl. 273—110 **3 Claims**



A foot operated game apparatus for moving a ball element through a maze. The game apparatus includes a base frame with channels formed therein. A cover plate is mounted to an upper surface of the base frame and permits an operator to stand on the apparatus. A resilient member is secured to a lower surface of the base frame. As the operator applies pressure to a specific area of the cover plate, the resilient member is compressively displaced in that area and the base frame tilts. By manipulating foot pressure on various areas of the cover plate, the operator may tilt the apparatus in a predetermined direction to guide the ball through a predetermined path within the channels.

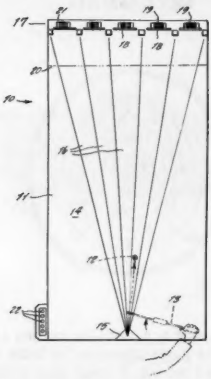
3,811,677
GAME PLAYED ON STILTS WITH NONROUND BALL
Jorge S. Saladrigas, Calk Uracoa Ota. Los Saladrigas Urbanizacion El Marquez, Caracas, Venezuela
Continuation of Ser. No. 888,584, Dec. 29, 1969. This application Apr. 11, 1972, Ser. No. 243,096
Int. Cl. A63b *67/00*
U.S. Cl. 273—118 R **1 Claim**

A game resembling Soccer-Football in which the players move on stilts and such stilts are used to "kick" a ball in the form of a modified cube having flattened corners and flattened edges.

3,811,678
HAT-SKEET OR CUP-SKEET
John Fink, P.O. Box 206, Blackfoot, Idaho
Filed Nov. 5, 1971, Ser. No. 195,909
Int. Cl. A63f *3/00*
U.S. Cl. 273—126 R **2 Claims**

A sports type of game device for being played for fun, and which is modelled after skeet shooting, the game device consisting of a horizontal table panel of 4 by 8 feet, having a target on one end where there are a series of solonoid operated gates at the ends of a series of target lanes that extend diverging from a shooting area at the opposite end of the table panel,

and whereupon a hat-shaped, inverted cup is placed, the top of the cup having a cross slot into which one end of a piano



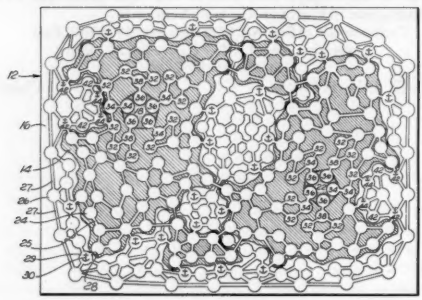
steel wire rod is receivable and which at its other end is held in the hand for flinging the cup along the target lanes toward the targets.

3,811,679

WARFARE GAME

Donald Benge, 1122 W. Burbank Blvd., Burbank, Calif.

Filed Sept. 22, 1972, Ser. No. 291,505
Int. Cl. A63f 3/02
U.S. Cl. 273—131 BB 7 Claims



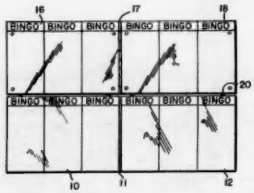
A game simulating warfare containing a game board and a plurality of pieces movable thereon. The game board represents a plurality of sections of land and bodies of water. The bodies of water are adjacent portions of the land. A plurality of spaces are positioned on the bodies of water and sections of land with the pieces movable only between adjacent spaces which are interconnected. The pieces are divided into land pieces and water pieces and in addition, are classified into different categories. Each piece of a specified category is movable a predetermined maximum number of spaces. The sections of land have at least one portion representing a "capitol" of each portion with a plurality of spaces assigned to each capitol. Each space in each capitol portion is connected to a single different space outside the capitol portion. The game is terminated when the pieces assigned to one of the capitols "occupy" the spaces assigned to one of the other of said capitols, or the pieces assigned to one of the other capitols "captures" the pieces assigned to the other capitol.

3,811,680

BINGO CARD HOLDER

Frederick E. Benesch, 957 Broadway Ave., Holbrook, N.Y.

Filed June 26, 1973, Ser. No. 373,858
Int. Cl. A63f 3/06
U.S. Cl. 273—136 G 10 Claims



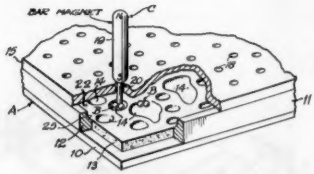
An arrangement for supporting game cards such as bingo cards on the lap of a player or on a table surface in front of the player. A plurality of boards are interlinked to accommodate a number of such game cards used by the player. Removable legs attachable to the boards allow the board to be supported on the lap of a player at an inclined angle, or on a table surface in front of the player. Interlinking or disengagement of the board are achieved without the application of tools.

3,811,681

GAME WITH MAGNETIC EXTRACTION OF COUNTERS

Danny H. Sprouse, and Muriel K. Sprouse, both of 1830 Oak St., Paso Robles, Calif.

Filed Dec. 15, 1972, Ser. No. 315,331
Int. Cl. A63b 71/06
U.S. Cl. 273—139 10 Claims



A hollow game board has a top panel provided with apertures through which spherical counters of magnetic (e.g., ferrous) material are extracted by applying a bar magnet to an aperture above one or more of the counters resting therebeneath. A bottom, spaced below the top panel, has a plurality of shallow indentations in which the counters may collect after being distributed by shaking the board. Counters of different colors have varying values representing, for example, gold, silver, uranium, etc., or ground water, oil deposits, etc., or may represent other items of value such as fish or game. The game may take several forms such as prospecting, fishing, hunting, etc. The counters are hidden from view.

3,811,682

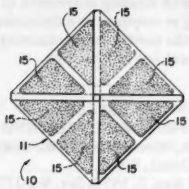
FOLDING PUZZLE

Robert E. Neale, New York, N.Y.; Paul C. Wilhelmsen, Alamo, and David R. Winterhalter, Berkeley, both of Calif., assignors to Berkeley Applied Research Corporation, Alamo, Calif.

Filed June 1, 1972, Ser. No. 258,504
Int. Cl. A63f 9/08
U.S. Cl. 273—155 4 Claims

An interlocking folding puzzle is formed from an elongated rectangular web having a plurality of triangular stiffening

panels arranged thereon in spaced apart sets of four to form four repeating spaced apart edge aligned squares. Each of the squares is folded along one of its diagonals and the ends of the web are connected together such that each square forms one quarter of a composite interfolded square. Those portions of



the web between the stiffening panels constitute hinges which enable the stiffening panels to assume various relationships relative to each other. The web is formed of polyethylene, polypropylene or polyvinylchloride to provide long life, nonmemory hinges.

3,811,683

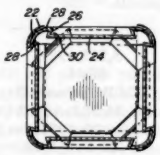
CUBE FORMING DISC PUZZLE

Frederick G. Street, 27 Jackson Ave., Bradford, Pa.

Filed Dec. 7, 1972, Ser. No. 311,729

Int. Cl. A63f *9/12*

U.S. Cl. 273—157 R **4 Claims**



Six dish-shaped discs have curved upstanding marginal edge portions selectively interleaved at spaced peripheral points to define a cube unit. The discs are of varying configurations, including straight angularly related edges, retaining ribs of various angles, upstanding ears, domed center portions, cutout center portions, or oblong shapes, all to vary the degree of difficulty associated with the assembly of the discs into a cube.

3,811,684

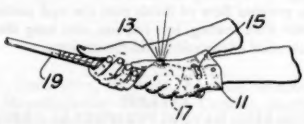
GOLF SWING TRAINING GLOVE INCLUDING LIGHT PROJECTING DEVICE

Wynn B. Tredway, Sr., P.O. Box 130, Freeport, Pa.

Filed June 11, 1973, Ser. No. 368,812

Int. Cl. A63b *69/36*

U.S. Cl. 273—183 B **5 Claims**



A golf swing training device wherein a golfer's glove supports and positions a light at the knuckle of the root of the forefinger of a golfer's hand so that when the golfer wears the glove and addresses a ball and then swings the club on the backswing properly, the rays of light from the light on the glove follow a prescribed path on an adjacent wall.

3,811,685

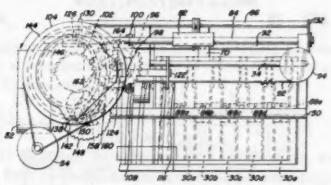
CASSETTE TAPE RECORDER WITH INDEXING HEAD

Robert Haake, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 3, 1971, Ser. No. 204,610

Int. Cl. G11b *5/00, 15/26*

U.S. Cl. 360—92 **12 Claims**



There is disclosed tape recorder-reproducer which is adapted to receive and play a plurality of tape cassettes of the type having a plurality of separately playable record tracks, at least one of the record tracks being recorded in a direction opposite from the second of the record tracks. More particularly, the improvement in the tape recorder-reproducer comprises a movable record-reproducer head and a means for selectively indexing the head from a first position to a second position wherein the head reproduces one of the record tracks of the first cassette when in the first position and one of the tracks of the second cassette when the head is in the second position. Additional features are also disclosed.

3,811,686

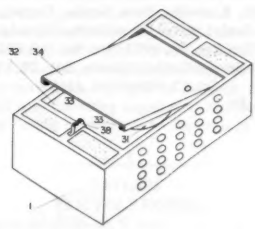
CASETTE-TYPE TOY PHONOGRAPH

Katsumi Watanabe, No. 371 Ozenji, Kawasaki-shi, Kanagawa-ken, Japan

Filed June 28, 1971, Ser. No. 157,202

Int. Cl. G11b *3/40, 25/04*

U.S. Cl. 274—9 C **1 Claim**

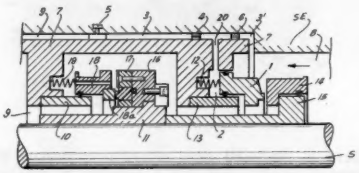


A toy electric phonograph comprising a housing having a top opening and a closure pivotally supported at one end within the opening. The closure has means on its inner surface for removably supporting a grooved record. The housing contains an upwardly pointed stylus which is suported rotatably to engage in the groove of the record to follow it from end to end. The closure is normally biased at its pivoted end to be upwardly tilted for record insertion and to simultaneously open a switch in the electric circuit. The housing is provided with a latch that automatically engages the other end of the closure when the latter is pressed down against it into level position, to lock it in place with the record in engagement with the stylus, simultaneously closing the switch in the circuit. The latch is automatically released when the stylus reaches the end of the record groove.

3,811,687
SHAFT SEAL

Ernst Honold, Frankenthal; Werner Hubner, and Hans-Dieter Sturm, both of Beindersheim, all of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal Pfalz, Germany

Filed Feb. 3, 1972, Ser. No. 223,207
Claims priority, application Germany, Nov. 17, 1971, 2156953
Int. Cl. F16j *15/34, 15/54*
U.S. Cl. 277—28 **4 Claims**

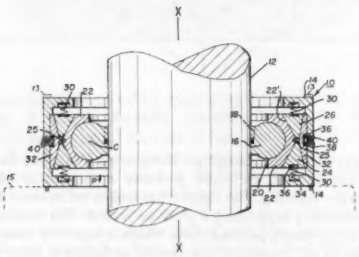


A shaft seal for reactor pumps has a rotary shaft surrounded by an element stationary relative to the shaft and defining with the same an annular clearance opposite open ends of which are exposed to fluid at high pressure and to the atmospheric pressure, respectively. A hydrostatic seal is located in the clearance adjacent the end exposed to fluid under pressure and includes a first ring rotatable with the shaft and a non-rotatable second ring which is urged into axial engagement with the first ring. A mechanical seal is located in the clearance adjacent the open end exposed to atmospheric pressure and between the two seals a chamber is provided which is connected via first and second passages with the opposite open ends of the clearance. Two fixed throttles are provided in these passages and a valve is located in the passage connecting the chamber with the end exposed to atmospheric pressure and can be opend and closed.

3,811,688
MECHANICAL SEAL FOR ROTARY SHAFT

Basil G. Smith, Kentville, Nova Scotia, Canada, assignor to Basil Smith Seals Limited, Nova Scotia, Canada

Filed Dec. 28, 1971, Ser. No. 213,202
Claims priority, application Canada, Dec. 29, 1970, 101600
Int. Cl. F16j *9/00, 15/16*
U.S. Cl. 277—39 **10 Claims**

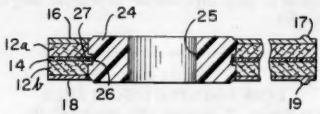


A mechanical seal includes a stationary housing of the type adapted to be mounted on and connected to a machine casing. A rotor is positioned within the confines of the housing and is rotatable relative thereto about an axis. This rotor includes an outwardly directed seal engaging surface. A floating seal ring surrounds the rotor and sealingly engages the same. The seal ring confines the rotor such that the only substantial movement which can take place therebetween is rotation of the rotor about the above mentioned rotation axis. This seal ring is radially spaced from the stationary housing. A device is provided which bridges the space between the housing and the floating seal ring and provides a fluid seal between them. The bridging device, seal ring and housing are so constructed and arranged as to permit floating movement of the seal ring relative to the housing in response to extraneous forces applied to the rotor while at the same time maintaining fluid sealing relation between the seal ring and housing.

3,811,689
PREFORMED BUSHING

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co., New Lisbon, Wis.

Filed Aug. 2, 1972, Ser. No. 277,389
Int. Cl. F10j *15/06;* **F16j** *15/10*
U.S. Cl. 277—166 **7 Claims**

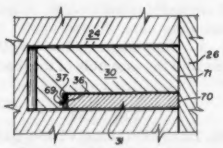


Annular bushings are provided with a circumferential projection or groove to index and retain the bushings in place in laminated insulator gaskets.

3,811,690
SEAL

Maurice J. Moriarty, 3225 W. Sahuaro Dr., Phoenix, Ariz.

Continuation of Ser. No. 66,333, Aug. 24, 1970, abandoned.
This application Sept. 25, 1972, Ser. No. 291,756
Int. Cl. F16j *9/16*
U.S. Cl. 277—193 **2 Claims**



An improved seal primarily for piston ring use wherein leakage is minimized by means of a seal member overlaying the end gap of the ring member and a ridge on the ring member to prevent flow of fluids past the end portion of the seal member. Fast seating, low friction, and long life are provided by selection of materials and dimensions.

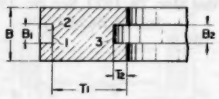
3,811,691
PISTON RING HAVING PERIPHERAL GROOVE

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Sept. 3, 1971, Ser. No. 177,763
Int. Cl. F16j *9/20*
U.S. Cl. 277—224 **1 Claim**

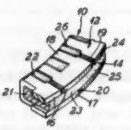
A piston ring having a peripheral groove formed in its outer sliding surface for accommodating a ferrosoferric oxide to improve the wear-resistivity of the piston ring is modified by

removing a segment of material from the piston ring. This segment of material, or balance cut, is provided at the inner



peripheral side of the piston ring for balancing the stress forces on the piston ring and thereby reducing the tensile stress on the outside periphery of the piston ring.

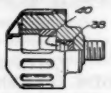
3,811,692
PLASTICS FILLED PISTON RING
Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio
Continuation-in-part of Ser. No. 50,677, June 29, 1970, Pat. No. 3,697,090. This application May 30, 1972, Ser. No. 258,061
Int. Cl. F16j *15/16*
U.S. Cl. 277—231 **6 Claims**



A composite metal and plastics piston ring having a controlled operative load-deflection ratio. The piston ring is composed of a circumferentially expansible and contractible channel-type metal ring component and an elastomeric plastics material ring component anchored to and supported by the metal ring. The plastics material ring component has a peripheral wall and side walls with at least one side wall having integral ribs projecting therefrom into the gaps between the segments of the metal ring component and the ribs being spaced from the segments in the expanded free condition of the composite ring but engaging the segments to seal the gaps in the contracted, use condition of the composite ring. The composite piston ring is formed by compacting an elastomeric plastics material in a segmented circumferentially expansible and contractible channel-type metal ring component in its expanded, free condition to form a continuous plastics material ring component therein, contracting the compacted plastics-filled metal ring to its use condition to form ribs of the plastics material in the gaps between the segments of the metal ring component, and heating the compacted plastics-filled metal ring in its expanded, free condition to sinter the plastics material ring therein in an integrally bonded relation to the metal ring providing a composite metal and plastics piston ring.

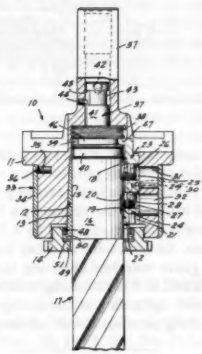
3,811,693
DRILL CHUCK
George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England
Filed Mar. 30, 1973, Ser. No. 346,420
Claims priority, application Great Britain, May 15, 1972, 22698/72
Int. Cl. B23b *31/04*
U.S. Cl. 279—18 **10 Claims**

A drill chuck having a sleeve for reception of a drill shank through a central hole in its front end into a body part in the sleeve, the body part carrying mutually slidable gripping members provided with apertures into which the shank is received and retained by means of adjustable screws in the slidable member. The sleeve is internally formed to carry a disc that



bears against an outermost one of the gripping members, and the body is adapted for reception of a tanged end of a drill inserted into the chuck.

3,811,694
COLLET CHUCK
George L. Dahlman, Birch Run, and Leon O. Kern, Frankenmuth, both of Mich., assignors to Houdaille Industries, Inc., Buffalo, N.Y.
Filed May 31, 1972, Ser. No. 258,408
Int. Cl. B23b *31/04*
U.S. Cl. 279—83 **15 Claims**



A collet chuck includes a body, a tapered collet received therein for receiving the shank of a tool, a nut acting between the body and the collet, axially slidable key means for effecting a positive drive from the body to the tool, and an axially adjustable end stop for being engaged by the end of the tool, said end stop being connected to the axially slidable key means.

3,811,695
TRICYCLE HORSE
Russell B. Curtis, Eagle Butte, S. Dak.
Filed June 23, 1972, Ser. No. 265,582
Int. Cl. B62m *29/00*
U.S. Cl. 280—1.192 **14 Claims**

A toy for children having a simulated plastic horse to which is affixed on the interior with suitable fasteners a frame having

three wheels at its lower extremity. This device includes a main frame which secures the plastic horse to the device and includes also a pivotable front wheel to which is affixed a handle bar. The device is propelled by foot pedals and is supported at the rear novel spring means in order to initiate a rocking action.

3,811,696

SKI SAFETY BINDING ELEMENT WITH ADJUSTABLE RELEASE FORCE

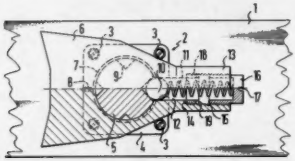
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. (GmbH), Leonberg, Germany

Continuation-in-part of Ser. No. 303,032, Nov. 2, 1972. This application Jan. 22, 1973, Ser. No. 325,247

Claims priority, application Germany, Jan. 27, 1972, 2203867

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T **14 Claims**



A pivotally mounted toe holder in a ski safety binding is held in its angular operating position by a spherical detent engaging a radial notch in the shaft carrying the toe holder. The detent is biased inward of the recess by a helical compression spring whose stress may be adjusted by a threadedly mounted backing member. An abutment member has an abutment face in the tubular guide member receiving the spring and partly receiving the detent and the backing member, and impedes or prevents excessive tightening of the spring by threaded movement of the backing member inward of the guide member.

3,811,697

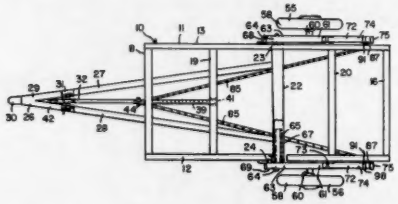
VERTICAL LIFT TRAILER

Alvin P. Armstrong, Vancouver, British Columbia, Canada, assignor to Kolof Holding Limited, West Vancouver, British Columbia, Canada

Substitute for Ser. No. 730,780, May 21, 1968. This application Jan. 11, 1971, Ser. No. 105,435

Int. Cl. B62d 21/18

U.S. Cl. 280—43.18 **6 Claims**



A trailer having a pair of ground engaging wheels mounted on the after ends of a pair of elongated supporting members the latter being swingably connected for rotation about a transverse axis to the trailer frame. Leaf springs, to which operating cables are connected, extend rearwardly from the supporting arms for swingably positioning the latter relative to the trailer frame when operated by cables.

3,811,698

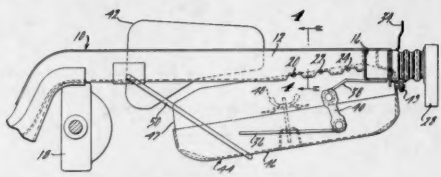
STRUCTURE FOR A MOTOR VEHICLE

Patrick M. Glance, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 29, 1972, Ser. No. 239,062

Int. Cl. B62d 27/04

U.S. Cl. 280—106 R **12 Claims**



A frame structure for the chassis of a motor vehicle having a construction designed to absorb kinetic energy by plastic deformation of the frame components. The frame has longitudinally extending side rails with fluted lower edges in side elevational view. When an impact load is exerted against the end of the frame assembly, the side rails will collapse by bending at each flute in a progressive manner to absorb the energy of the impact.

3,811,699

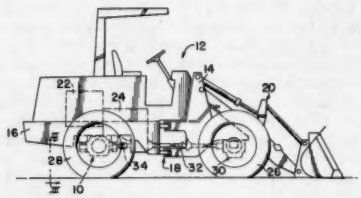
AXLE TRUNNION SUPPORT ARRANGEMENT

Robert Casey, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 21, 1972, Ser. No. 282,136

Int. Cl. B60g 9/02

U.S. Cl. 280—111 **6 Claims**



There is disclosed a trunnion support assembly for pivotally supporting an axle to a vehicle. The trunnion comprises a sleeve member extending into a pilot bore in the axle housing and held in place by a thrust plate and a single set of bolts.

3,811,700

AXLE CLAMP FOR SHEAR RUBBER VEHICLE SUSPENSION

Robert G. Moore, Elkhart, Ind., assignor to Hickman Developments, Inc., Eden, N.Y.

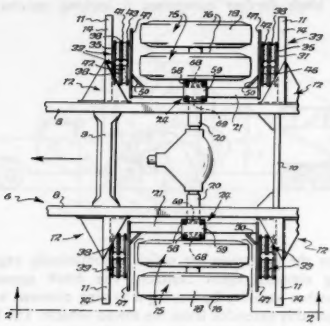
Filed Jan. 29, 1973, Ser. No. 327,815

Int. Cl. B60g 11/24

U.S. Cl. 280—124 R **4 Claims**

In adapting the suspension of the Hickman U.S. Pat. No. 3,279,820 to rear drive axles with round tubular ends, conventional U-bolt clamps between the axle ends and the out-of-round torsionally rigid beam extending lengthwise of the line of vehicle travel were found inadequate. The present clamp avoids this inadequacy by providing plates fitting the top and bottom sides of each torsionally rigid bar; U-bolts embracing the corresponding round tubular axle end with their legs extending through openings in these plates; vertical spacers interposed under pressure between these plates and embracing

the torsionally rigid beam and arranged between the corresponding legs; and blocks in line with the spacers and interposed under pressure between the axle end and the adjacent plate. The spacers and blocks unify the torsionally rigid beam, plates, U-bolt legs and axle to prevent destructive strains on the legs.



3,811,701

RESTRAINING DEVICE FOR A VEHICLE PASSENGER

Geoffrey Grime, Swansea, England, assignor to Britax (London) Limited, Byfleet, England

Division of Ser. No. 157,110, June 28, 1971, Pat. No. 3,764,159. This application July 18, 1973, Ser. No. 380,277

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 B **19 Claims**

A restraining device to restrain an occupant of a vehicle. The device may be a pad or belt attached to a member movable alongside the occupant's seat between an operative position where the pad or belt is adjacent the occupant's chest and an inoperative position spaced from the occupant's chest. The member is either slidable or pivotable and preferably attached to inertia locking means and a device for absorbing forward momentum of the occupant on deceleration of the vehicle. The member can be automatically positioned in its operative position when the vehicle is occupied or used whereby a passive restraint is provided.

3,811,702

SAFETY DEVICE FOR MOTOR VEHICLE

Yoshiya Kurasawa, Yokohama, and Syuichi Otani, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

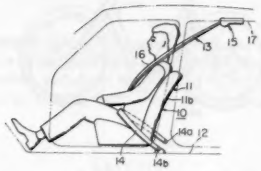
Filed June 5, 1972, Ser. No. 259,768

Claims priority, application Japan, July 15, 1971, 46-62393[U]

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **1 Claim**

A safety device for protecting a vehicle occupant from injury during a collision of a motor vehicle, which device includes a seat belt extending over the seat portion of a seat of the motor vehicle, and a shock absorber associated with the seat belt for absorbing an energy of the vehicle occupant due to a sudden deceleration of the motor vehicle when the motor vehicle encounters the collision. The shock absorber includes a cylinder body having a fluid chamber containing therein a fluid, the cylinder body being connected at one end to a leading end of the seat belt, a piston slidably disposed in the fluid chamber of the cylinder body, a connecting rod connected to the piston and movable therewith, a coupling means having one end connected to the other end of the cylinder body and the other end pivotally connected to a structural part of the motor vehicle, and destructible retaining means provided for connecting the other end of the cylinder body to the destructible means for retaining the piston in a rest position, the retaining means being destroyable when the seat belt connected to the cylinder body is subjected to a predetermined magnitude of tension due to the forward movement of the vehicle occupant during the collision of the motor vehicle.



3,811,703

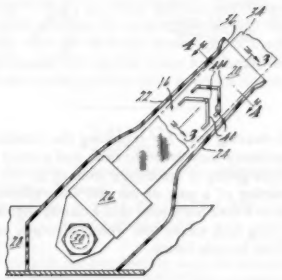
SAFETY BELT PROTECTOR

Frank D. Turkovich, Madison Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 30, 1972, Ser. No. 311,028

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **5 Claims**

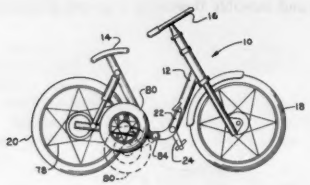


A safety belt webbing guard for use in conjunction with a safety belt retractor mechanism which will remove any folds or twists in the webbing which might occur during safety belt usage before such twists interfere with functioning of the retractor. The guard comprises a sleeve portion through which the webbing passes just prior to being wound on the retractor with the sleeve being provided with runners which contact the webbing. The runners are shaped to unfurl any twists or loops which may be in the safety belt webbing.

3,811,704
SELF-PROPELLED HYDRAULICALLY DRIVEN VEHICLE

Bran F. Gregoric, 4685 Central Blvd., Ann Arbor, Mich.

Filed Oct. 12, 1972, Ser. No. 296,871
Int. Cl. B62m *3/00*
U.S. Cl. 280—216 3 Claims

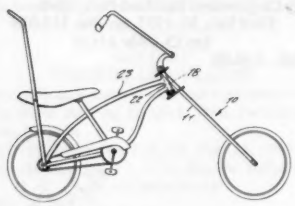


A self-propelled bicycle-type vehicle comprising a frame, front and rear wheels supporting the frame, a foot pedal actuated pump on the frame operable to provide fluid under pressure and a torque producing mechanism associated with the bicycle drive wheel and driven by fluid from the pump. The vehicle also has two auxiliary side wheels which are movable between retracted and ground engaging positions. The side wheels engage the ground so as to prevent the vehicle from tipping over when the vehicle is at rest or is moving slowly. A pump actuated lift system on the frame retracts the wheels when the vehicle has achieved a predetermined speed.

3,811,705
EXTENDED FRONT END FOR A BIKE

Michael D'Ambra, 59 Seba Ave., Brooklyn, N.Y.

Filed May 2, 1972, Ser. No. 249,663
Int. Cl. B62k *3/00*
U.S. Cl. 280—279 1 Claim



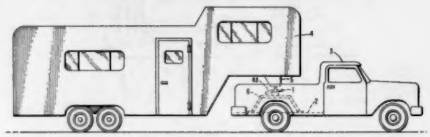
A special steering fork for replacing the standard steering fork of an ordinary bicycle, so to raise and extend the bicycle front end, thus giving it the appearance of an easy rider; the device consisting of a pair of parallel steel plates which are also secured to a fork neck tube that extends angularly respective to the long fork tubes and which pivotally supports the front end of the bicycle frame.

3,811,706
TRAILER HITCH

Raymon Z. Tucker, Elkhart, Ind., and Jack O. Benson, Union, Mich., assignors to Schott Industries, Inc., Cincinnati, Ohio

Filed Jan. 2, 1973, Ser. No. 320,605
Int. Cl. B62d *53/12*
U.S. Cl. 280—407 14 Claims

A hitch apparatus for securing a trailer to a towing vehicle. In particular a hitch is provided which is useful for securing trailers of the type known as "Fifth Wheel" trailers to a pick-up truck and includes a pair of outrigger supports secured to the truck bed and extending over the rear wheel wells, and a removable crossmember which is mountable at a plurality of points on the outrigger supports to insure placement of the crossmember for maximum support with respect to the rear axle. The hitch further comprises a locking mechanism

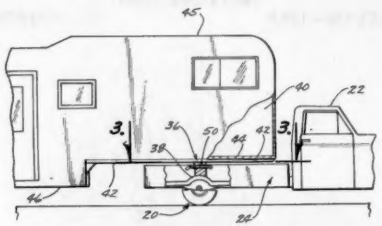


mounted on the crossmember which automatically engages the mating element upon contact. The hitch apparatus, achieves further stability by having a mating element which may be adjustably extended from the towed vehicle. The hitch is provided with a self-locking feature and means for securing the lock in a locked or unlocked position.

3,811,707
FIFTH WHEEL TRAILER AND PRIME MOVER THEREFOR

Calhoun G. Jeambey, 7013 Palm Dr., Des Moines, Iowa

Filed Aug. 7, 1972, Ser. No. 278,604
Int. Cl. B62d *53/00*
U.S. Cl. 280—423 R 3 Claims



A fifth wheel trailer and prime mover therefor is disclosed which substantially increases the head room in the living compartment at the forward end of the trailer. The living compartment at the forward end of the trailer has a floor structure at the lower portion thereof which is supported by a substantially shallow frame structure. The prime mover has a fifth wheel hitch mounted on the frame of the prime mover. The frame structure of the trailer extends closely over the rearward end of the prime mover frame.

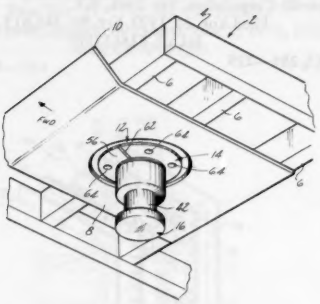
3,811,708
TRAILER HITCH

George L. Baaso, Royal Oak, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 13, 1973, Ser. No. 331,752
Int. Cl. B62d *53/08*
U.S. Cl. 280—433 12 Claims

A kingpin socket has a vertical opening which is frusto-conical at the bottom, converging upward, and horizontally slotted at the top. A kingpin has a T-head that passes through the socket slot and is then turned to place the T across the slot against a stop. A radially split nut having an external conical surface engages a thread on the kingpin and tightly frictionally

grips the socket cone. Cooperating cylindrical surfaces on the kingpin and in the socket give the assembly lateral stability,



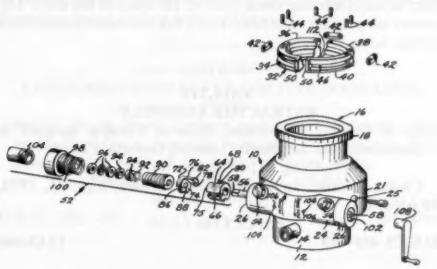
and a sleeve welded to an upper surface of the socket and to the trailer floor gives the socket added stiffness and strength.

3,811,709

FULL BORE CASING HEAD

John K. McGee, and Marvin L. Holbert, Jr., both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Sept. 6, 1972, Ser. No. 286,755
Int. Cl. F16l *35/00*
U.S. Cl. 285—39 12 Claims



The casing head has a throughbore which is equivalent in diameter to that of the control equipment (e.g., blowout preventers) that are installed above the head. Expansible support ring means are installed in the head to hang casing. A drill bit of larger diameter than the internal diameter of the contracted ring may be pulled up through the ring should the operator have forgotten to expand it. Wash out ports are provided to prevent accumulation of foreign matter in the working space of the support ring. The invention is applicable to single, multi-bowl and compact head completions.

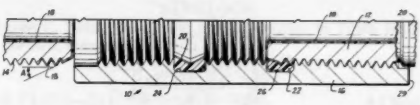
3,811,710

SEALED TUBULAR JOINT

Alfred A. Dula, and Elwood Wehring, both of Houston, Tex., assignors to Pipe Specialties, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 876,307, Nov. 13, 1969, abandoned. This application Oct. 22, 1971, Ser. No. 191,644
Int. Cl. F16l *9/14*
U.S. Cl. 285—55 6 Claims

A sealed joint for threaded tubular members including a male threaded member, a female threaded member having an internal groove interrupting its internal threads and a sealing ring in the groove and having an internal taper to seal against the external end taper of the male member. The internal groove in said female member having a tapered surface of increasing diameter in a direction away from the nearest end of the female member. The sealed joint is also suitable for use with internally coated tubular members, and the coating ex-



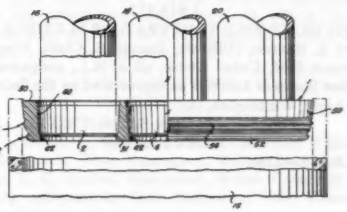
tends only partially through the groove in the female member. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,811,711

MULTIPLE CONCRETE TO PLASTIC PIPE ADAPTER

Ernest L. Tarkenton, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.

Filed Oct. 3, 1972, Ser. No. 294,568
Int. Cl. F16l *39/00*
U.S. Cl. 285—110 1 Claim



An adapter for connecting a plurality of circular pipes to a rectangular tube to form conduits for electrical wires and communication cables. The adapter has a plurality of passages formed therein having annular shoulders extending into each passage. Surfaces on a pipe when inserted in the passage urge the shoulder and ribs on the outer periphery of the adapter outwardly such that the shoulder seals against the outer surface of the pipe and ribs on the outer surface of the adapter seal against inner surfaces of the tube in which it is inserted.

3,811,712

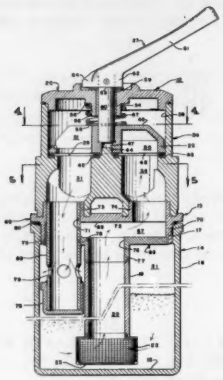
ADAPTER

Salvatore E. Barrera, Mountaintop, Pa., assignor to Wilkes Pool Corporation, Berwick, Pa.

Filed May 9, 1972, Ser. No. 251,710
Int. Cl. F16l *47/00*
U.S. Cl. 285—132 4 Claims

An adapter suitable for conducting separate streams of fluid between a device having a pair of ports and a container having an internally threaded opening communicating with first and second chambers within the container, generally including a housing defining a chamber and having external threads for threading the housing into the internally threaded opening of the container, an outer port communicating with the housing chamber and communicable with one of the pair of ports of the device, an inner port communicating with the housing chamber and communicable with the second container chamber, and means projecting through the housing chamber intercommunicating the other of the pair of ports of the device and the first container chamber when the device is mounted

on the adapter with one of the pair of ports of the device communicating with the outer port of the housing and the adapter



is threaded into the internal-threaded opening of the container with the inner port of the housing communicating with the second container chamber.

3,811,713

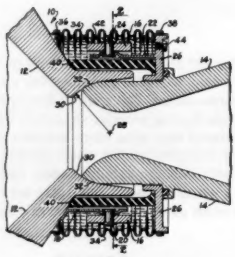
FLUID-TIGHT HIGH TEMPERATURE FLEXIBLE JOINT

Hillard E. Barrett, Hillsdale; Donald B. Clark, Wayne, and Bernard Seid, Cedar Grove, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 28, 1958, Ser. No. 776,872

Int. Cl. F16l 5/00

U.S. Cl. 285—226 **7 Claims**



1. A flexible fluid tight connection for high temperature gases; said connection comprising first and second substantially abutting tubular parts for transmitting said gases; means disposed outside of the abutting ends of said tubular parts and connecting said parts together so as to permit tilting adjustment of the axis of one of said parts relative to that of the other of said parts; an annular flexible diaphragm having one end connected to one part and the other end connected to the other part, said diaphragm being disposed so as to bridge the outer side of the abutting ends of said parts so as to provide a seal there across; a ring of rubber-like material also bridging the outer side of the abutting ends of said parts but being disposed inwardly of both said diaphragm and said connecting means, said ring having a first portion bonded to one of said parts and a second portion bonded to the other of said parts so as to provide an annular sealed space between said ring and diaphragm; and a liquid disposed within said sealed space.

3,811,714

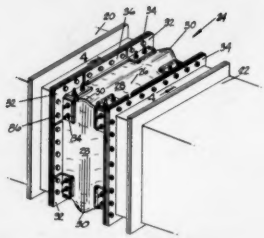
CORNER ADAPTORS FOR EXPANSION JOINTS

Frederick Bruce Pintard, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,615

Int. Cl. F16l 51/02

U.S. Cl. 285—229 **11 Claims**



A corner adaptor for a frameless flexible expansion joint comprises inner and outer complementary members adapted to be secured together and to a corner of a duct. A corner of the expansion joint boot is received between the inner and outer members and is secured thereto whereby each corner adaptor positions, reinforces, seals, supports and secures a corner of the boot to a corner of the duct. Intermediate the corner adaptors, clamping bars secure the boot directly to the duct to complete the connection of the boot to the duct. The corner adaptor accommodates both flat belt boots and molded corner boots.

3,811,715

RETRACTOR ASSEMBLY

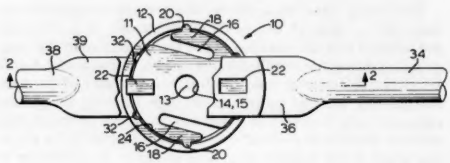
Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Ontario, Canada

Filed Aug. 21, 1972, Ser. No. 282,434

Claims priority, application Great Britain, Aug. 31, 1971, 40,656/71

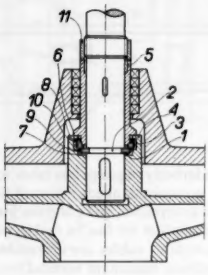
Int. Cl. F16c 11/10

U.S. Cl. 403—93 **13 Claims**



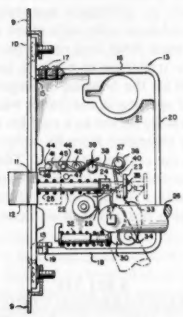
This invention provides a retractor assembly in which a first and second member are connected adjustably by a bolt means or the equivalent so that they may rotate about a common axis with respect to each other. One of the members has radially outwardly directed rib means which resist deformation away from an unstressed position, while the other member has a conically diverging wall centered on the axis, the wall having a number of outward grooves adapted to receive the rib means upon mutual rotation of the members. The members are capable of mutual axial displacement to compensate for wear of the rib means.

3,811,716
SYSTEM FOR LOCKING A HUB OF ROTODYNAMIC PUMP ROTOR ON PUMP SHAFT
Stanislaw Morzynski, Zamenhofa St. 13/6, Zabrze, Poland
Filed Dec. 27, 1972, Ser. No. 318,855
Claims priority, application Poland, Mar. 1, 1972, 152737
Int. Cl. F16b *11/00*
U.S. Cl. 403—204 3 Claims



A disconnectable locking system or arrangement between a rotor hub and pump shaft of a roto-dynamic pump when a shaft portion is inserted into a bore of the hub, including a locking sleeve on the shaft adapted to be moved by the action of a threaded nut so as to have one end thereof extend into the hub bore until a thrust shoulder on the sleeve engages the hub, the end of the sleeve being chamfered and adapted to contact a first split ring positioned in a recess in the hub bore so as to in turn contact a second split ring fastened to the shaft and forming a thrust surface with said first split ring.

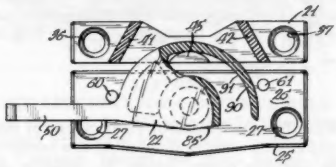
3,811,717
LATCH BOLT STOP LEVER FOR FIRE DOOR LOCK SETS
Alfred E. Floyd, North Guilford, and Lars E. Erickson, Clinton, both of Conn., assignors to Sargent and Company, Division of Walter Kidde & Co. Inc., New Haven, Conn.
Filed Mar. 1, 1973, Ser. No. 336,932
Int. Cl. E05f *15/20*
U.S. Cl. 292—92 6 Claims



This specification discloses a fire door lock set incorporating a latch bolt having a latch bolt stop lever which is normally maintained in an ineffective position by a fusible pin, but which drops into a position holding the head of the latch bolt in door closing position when the pin melts at a predetermined temperature caused by a fire condition.

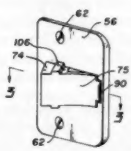
The present invention relates to the lock set incorporating a latch bolt and associated mechanism in a fire door and is concerned primarily with a latch bolt stop lever which is under the control of a fusible pin.

3,811,718
SASH LOCK
Wayne C. Bates, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.
Filed Aug. 10, 1972, Ser. No. 279,371
Int. Cl. E05c *3/04*
U.S. Cl. 292—241 8 Claims



A sash lock for double hung windows with the locking lever thereof provided with a smooth top to avoid collection of dirt and other foreign material and having design strength even if made of plastic to function with a keeper member to draw the window sash together in a vertical direction and having a second, unexposed, cam surface coacting with a lug on a keeper member to draw the meeting rails of the sash tightly together in a horizontal direction.

3,811,719
DOOR LATCHING ASSEMBLY
Stuart G. McBurnie, Burnaby, British Columbia; William A. W. Jorgensen, West Vancouver, British Columbia, and Michel L. E. Rocher, Vancouver, British Columbia, all of Canada, assignors to Velto Industries, Ltd., Vancouver, British Columbia, Canada
Filed Nov. 30, 1972, Ser. No. 310,803
Int. Cl. E05c *1/08*
U.S. Cl. 292—254 6 Claims

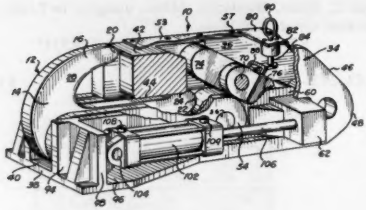


A latching assembly for attachment to a door frame and including a housing and a latch bolt. The bolt is connected at one end to a part of the housing to allow the bolt to swing in a horizontal plane between latched and unlatched positions. Additional reinforcing means is provided to resist forces tending to move the bolt across the door frame whereby the assembly can be lightly and inexpensively constructed.

3,811,720
RELEASABLE HOOK
Irving Epstein, 4216 Shore Club Dr., Mercer Island, Wash.
Filed Nov. 9, 1972, Ser. No. 305,089
Int. Cl. B66c *1/38*
U.S. Cl. 294—83 R 21 Claims

In the mooring of ships and boats to a dock, it is necessary to have a line running from the ship or boat to the dock. The line can be more or less tight and must be fixed so as to allow

relatively sudden movements of the ship or boat with respect to the dock. Then, when it is necessary to allow the ship or boat to sail away from the dock, it is necessary to disengage the line from the fastening means on the dock. This invention relates to a fastening means whereby a line can be positioned to the fastening means for securing the ship or boat adjacent



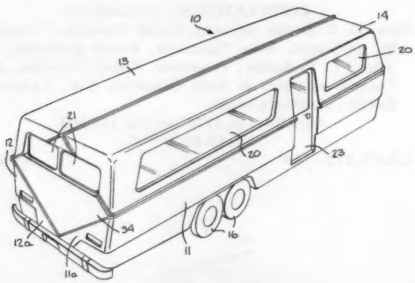
to the dock. Then, the person on the dock can, by means of a motor and electric control, if desirable, at a remote position from the fastening means, actuate the fastening means to allow the line to slip away from the fastening means and also to allow the ship or boat to sail away from the dock. This fastening means is identified as a releasable hook.

3,811,721

MOBILE BODY AND METHOD OF MAKING SAME

Richard C. Bolesky, Warsaw, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed June 1, 1972, Ser. No. 258,673
Int. Cl. B62d *29/04*
U.S. Cl. 296—28 R **18 Claims**



A mobile body, especially a mobile travel trailer body, formed from a plurality of angled sections of thermoplastic sheet material water-tightly joined to one another along their edges. In a preferred embodiment, a mobile travel trailer body is formed from four such quarter sections, a four-sided portion of thermoplastic sheet material water-tightly closing each end of the hollow four-sided body. A novel method of making such a body is shown. The lower pair of quarter section members of the resulting body are typically secured to a rigid frame having a plurality of road-engaging wheels mounted thereon.

Another embodiment utilizes a pair of quarter section members cooperating with a conventional half section member for forming the body portion of the mobile trailer.

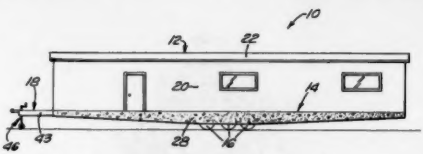
3,811,722

FOUNDATION STRUCTURE FOR MOBILE HOME

George T. Jones, P.O. Box 3217, Blue Jay, Calif.

Filed Dec. 7, 1972, Ser. No. 311,739
Int. Cl. B60b *3/32*
U.S. Cl. 296—23 R **5 Claims**

A foundation structure for mobile homes, comprising a prestressed, or post-stressed, lightweight concrete base, having longitudinally and transversely extending flanges on the underside, which give it structural stiffness and rigidity. The concrete base is much heavier than the conventional steel framework underbody, and a larger proportion of the total mass is incorporated in the foundation structure, so that the center of gravity of the complete mobile home is lowered to a level just about at the tops of the wheels, making it very stable.



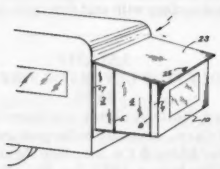
Cast concrete underbody requires less labor to build, its cost is less, no painting is required, needs no wood floor and therefor is less susceptible to termites, and conduits for plumbing, electric wires, and ventilation air can be cast in place. Prestressed steel reinforcing rods or cables are embedded in the flanges, and are bent to obtain maximum vertical force vectors at the ends of the concrete structure.

3,811,723

CAMPING TRAILER

William H. Anderson, 236 Pearl St. Apt. 11, Oregon City, Oreg.

Filed Sept. 25, 1972, Ser. No. 291,883
Int. Cl. B60p *3/34*
U.S. Cl. 296—26 **1 Claim**



An expansible and retractable housing adapted for concealed securement, when collapsed within the rearward end of a camping trailer or similar vehicle, and when extended and expanded to provide an additional bedroom or the like. The housing comprises foldable side walls made of panels hingedly interconnected to each other and to the the sides of an opening in a wall of the trailer or to a frame secured within said opening. A top wall for the housing is hingedly attached along the top edge of said opening in the trailer wall and when swung outwardly and upwardly serves as a roof for said housing when the housing is fully extended from its concealment within the opening, or within the confines thereof. The housing includes a bottom wall or platform adapted to be swung from a vertical position on the interior of the camper then downwardly and outward to provide a bottom wall or floor for the extended housing.

3,811,724

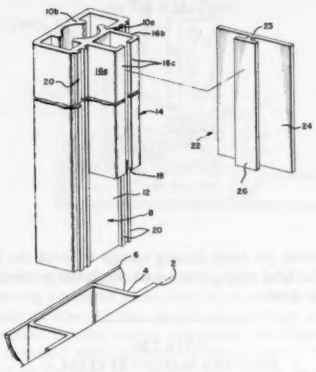
CARGO CARRYING VEHICLE

Ernest F. Woodward, 11 Circle Dr., Camp Hill, Pa.

Continuation-in-part of Ser. No. 186,051, Oct. 14, 1971, and Continuation-in-part of Ser. No. 210,498, Dec. 21, 1971, Pat. No. 3,764,177. This application Jan. 17, 1973, Ser. No. 324,399
Int. Cl. B62d *27/06*
U.S. Cl. 296—36 **6 Claims**

A quickly removable two-part stake for a flat bed cargo carrying vehicle, the parts of which are easily attached together

to form between them opposite channels for retaining the side edges of panels therein, and for quickly detaching them for removing the panels. The relative lengthwise movements of the parts of the stake and panels in both instances, are much less than the height of the panels or stakes. Also, the stakes



provide both anchoring and storage means for tarpaulin bows which have pivoted ends removably anchored in the stakes. A tie-down for the cargo which passes under the bottom edge of a panel is anchored to an anchor base secured to the edge of the platform outside of the enclosure formed by the removable panels.

3,811,725

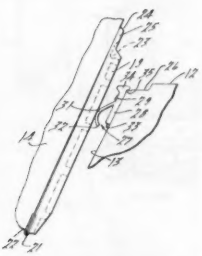
LATCH AND ANTI-RATTLE CLIP

David J. Bauer, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 29, 1973, Ser. No. 375,214

Int. Cl. B60n 1/02

U.S. Cl. 296—66 **4 Claims**



A combination latch and anti-rattle clip for a folding seat structure having a backrest panel pivotally mounted on the floor of a vehicle body. An elevated deck extends rearwardly of the floor and an upstanding wall extends from the floor to the deck. An extension panel is hinged to the backrest panel for pivotal movement with the latter from an upstanding position to a position in which the backrest panel, extension panel and elevated deck form a flat surface, the extension panel filling a space or gap between the backrest panel and elevated deck. The extension panel has a socket adjacent its edge opposite to its hinged edge.

The combination latch and anti-rattle clip comprises a high density elastomeric member having a flat base portion adapted to be mounted on the upstanding wall. A downwardly depending arcuate flange projects forwardly from the base portion intermediate the upper and lower edges of the latter. A terminal edge of the arcuate flange is in spaced relation to the bottom edge of the base portion. The arcuate flange is stiffly resiliently flexed toward the base portion upon engagement by the extension panel when the latter is folded against the backrest panel when both are in upstanding position thereby to provide the anti-rattle function.

At its upper edge the base portion is provided with an enlarged rib portion in spaced relation to the arcuate flange, the rib portion having on its rear edge a lip adapted to overlie the juncture of the upstanding wall and the elevated deck. The enlarged rib is receivable in the extension panel socket to latch the latter in planar relationship to the deck when the extension panel is in horizontal position between the backrest panel and elevated deck.

3,811,726

MOVABLE SEAT FOR A MOTOR VEHICLE

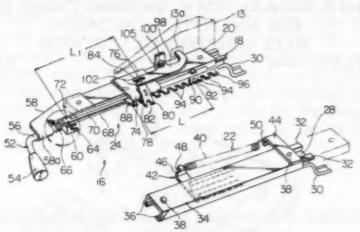
Masakazu Muraishi; Noriaki Hamada; Toshiyuki Shinkawa, and Tomiji Arai, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited and Ikeda Bussan Company, Limited, both of Yokohama City, Japan

Filed July 3, 1972, Ser. No. 268,841

Claims priority, application Japan, Nov. 12, 1971, 46-90477; July 10, 1971, 46-50678; July 10, 1971, 46-50676

Int. Cl. A47c 1/02

U.S. Cl. 297—341 **6 Claims**



An adjustable support structure for a seat unit of a motor vehicle, which structure permits fore and aft adjustments of the seat unit. The adjustable support structure comprises a stationary base member for fixing to a floor panel of the motor vehicle in laterally spaced and parallel relation to extend upwardly from the floor panel beneath the different seat ends in fore and aft relation thereto, a movable support member slidably carried on the stationary base member for fore and aft adjustments therealong and fixedly mounted thereon frame structures for the seat unit, a biasing means operatively interposed between the stationary base member and the movable support member for biasing the movable support member in forward direction, and a latch mechanism selectively releasable to cause the movable support member to automatically move in the forward direction under the force of the biasing means when the seat back is tilted forwardly to a predetermined angle.

3,811,727

SEAT BELT ANCHOR MECHANISM FOR ADJUSTABLE SEAT

Harvey R. Rumpel, West Allis, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

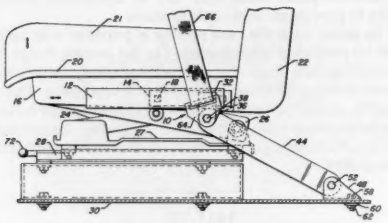
Filed Dec. 15, 1972, Ser. No. 315,719

Int. Cl. A62b 35/00; B60r 21/10

U.S. Cl. 297—385 **4 Claims**

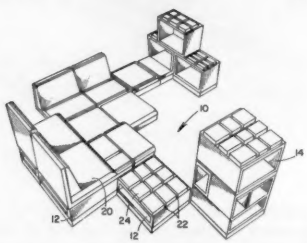
Seat belt anchor mechanism for vertically movable suspension seat having fore and aft adjustment feature provides an anchor point for a lap belt which is spaced from the vehicle

floor and movable relative to the floor. The anchor point is on a guide member carried by a slide on the upper movable seat frame and is movable vertically with the seat suspension but remains stationary when the movable seat frame is adjusted fore and aft. The guide member and anchor point are carried



at the end of a pivot link attached at its rearward end to the floor or rear wall of the vehicle at such an angle as to fully support the anchor point and eliminate the necessity for an auxiliary tether belt. The mechanism permits the lap belt to remain relatively stationary relative to the occupant, regardless of the amount of movement of the suspension.

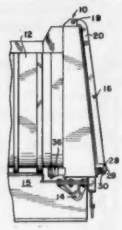
3,811,728
PLASTIC MODULAR FURNITURE
Richard K. Redemske, 4824 W. Hutchinson, Chicago, Ill.
Filed July 3, 1972, Ser. No. 268,545
Int. Cl. A47c 7/00; A47b 57/08, 47/00
U.S. Cl. 297—440 **9 Claims**



This invention relates to a new concept for plastic modular furniture using a unique system to combine individual modular components into a plurality of combinations for seating, sleeping, or storage. The invention comprises a plurality of individual molded plastic base modules having a plurality of grooves formed on one face thereon, and a plurality of shells for sitting, sleeping, storage, and table tops, having a perimetal ridge suitable for engaging anyone of the plurality of grooves on said base module. The positioning of the perimetal ridge into the grooves enables a plurality of combinations to be formed into sitting, sleeping, and storage units.

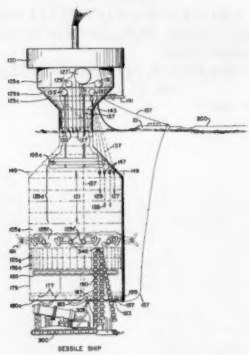
3,811,729
DUMP TRAILER HAVING AUTOMATIC TAIL GATE LOCK
George F. Vornberger, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 11, 1972, Ser. No. 313,884
Int. Cl. B60p 1/26
U.S. Cl. 298—23 M **5 Claims**

A dump truck trailer body having a swinging tail gate engaged by a pneumatically operated locking arrangement comprising a swinging spring biased locking hook operatively attached to a pneumatic cylinder which is actuated to disengage the locking hook from the swinging tail gate and permit gate opening. Release of air pressure from the pneumatic operating



cylinder allows the hook biasing springs to force the locking hook into locking engagement with the lower portion of the swinging tail gate.

3,811,730
DEEP SEA MINING SYSTEM
Ernest Blaney Dane, Jr., 57 Tyler Rd., Belmont, Mass.
Continuation-in-part of Ser. No. 148,853, June 1, 1971, abandoned, and a continuation-in-part of Ser. No. 754,191, Aug. 21, 1958. This application Aug. 29, 1972, Ser. No. 284,606
Int. Cl. E02f 7/00
U.S. Cl. 299—8 **20 Claims**

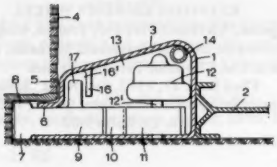


A deep sea mining system for mining ore from the surface of an ocean bed using a mining plant that travels the bed, a Sessile ship, and an interconnecting hoist pipe circuit. The system is transported to the mining site by a ship with streamline and structural strengthening sections which are later detached and reassembled into an auxiliary vessel. The hoist pipe circuit is towed to the mining site in sections which, during assembly of the hoist pipe circuit, are used to lower the plant to the ocean bed. After being lowered, the plant covers the bottom, the Sessile ship following the course of the plant, continually hovering over it. A scraper bucket system mounted on arms incorporated by the plant scrape ore nodules from the surface of the bed. The plant cleans the nodules of valueless mud, crushes them to particle size and couples the ore particles to the hoist pipe circuit where they are lifted as slurry and deposited in bins of the hovering Sessile ship.

3,811,731
LONGWALL CUTTER DRIVEN BY EQUALLY SPACED MOTORS

Bernhard Sann, Aachen, Germany, assignor to Gewerkshaft Eisenhutte Westfalia Methmar bie Lunen, Westfalia, Germany

Filed Sept. 27, 1972, Ser. No. 292,667
Int. Cl. E21c 29/00
U.S. Cl. 299—34 26 Claims

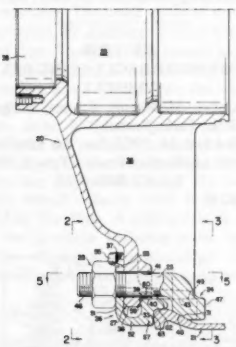


A mineral mining installation composed of a longwall conveyor having a ramped guide member at its mineral free side. The guide member locates on the face and acts as a housing for a traction member having interconnected elements which may be provided with cutters for cutting a groove at the floor region or at the floor and roof regions of the face. The elements, which are flexibly interconnected, have teeth which mesh with pinions driven by a number of hydraulic drive motors distributed along the length of the working. The motors can be housed in the guide member or disposed at the stowage side of the conveyor.

3,811,732
RIM AND WHEEL ASSEMBLY

William D. Walther, Dayton, and Robert A. De Regnaucourt, Centerville, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio

Filed May 11, 1972, Ser. No. 252,411
Int. Cl. B60b 23/00
U.S. Cl. 301—11 R 4 Claims

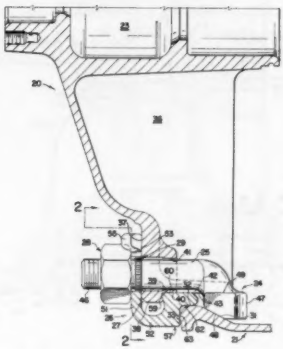


A rim and wheel assembly including a series of axially inner clamp means and a series of axially outer clamp lugs to cooperatively engage the mounting flange of a rim. The wheel has means thereon for positive retention of the clamp lugs. The clamp means each have a surface for engaging a surface on the rim. The clamp lugs each have intersecting surfaces for engaging surfaces on said rim. The clamp means are supported by fastening elements extending axially through the wheel. The fastening elements carry fastening means which draw the clamp means toward the clamp lugs to seat the rim flange.

3,811,733
RETAINED FASTENING ELEMENTS FOR A RIM AND WHEEL ASSEMBLY

Robert A. DeRegnaucourt, Centerville, and Fred R. Caudill, Dayton, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio

Filed June 26, 1972, Ser. No. 266,212
Int. Cl. B60b 23/00
U.S. Cl. 301—12 R 9 Claims

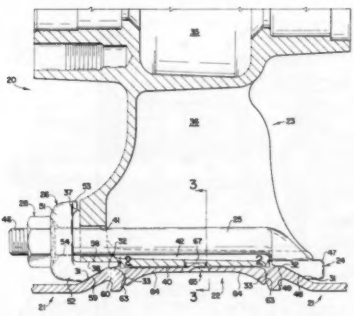


A rim and wheel assembly including a series of axially inner clamp means and a series of axially outer clamp lugs to cooperatively engage the mounting flange of a rim. The clamp means are supported by fastening elements extending axially through the wheel. The fastening elements carry fastening means which draw clamp means toward the clamp lugs to seat the rim flange. Means are provided so that the fastening elements are retained on the wheel when a rim is being demounted and mounted.

3,811,734
SPACER FOR A DUAL RIM AND SPOKED WHEEL ASSEMBLY

Robert A. De Regenaucourt, Centerville, and Fred R. Caudill, Dayton, both of Ohio, assignors to The Dayton Steel Foundry Company, Dayton, Ohio

Filed May 11, 1972, Ser. No. 252,413
Int. Cl. B60b 11/06
U.S. Cl. 301—13 SM 2 Claims

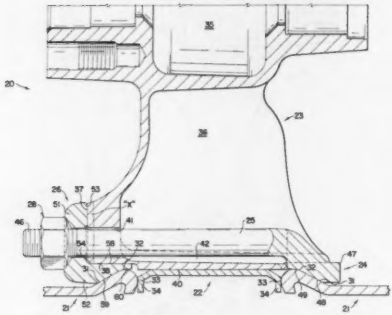


A positioned spacer for a dual rim and spoked wheel assembly having a strengthened medial portion and a series of alignment means received in correspondingly dimensioned openings in the spoke ends.

3,811,735
POSITIONED CLAMP LUGS FOR A DUAL RIM AND WHEEL ASSEMBLY

Robert A. De Regnaucourt, Centerville, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed June 26, 1972, Ser. No. 266,213
Int. Cl. B60b *23/00*
U.S. Cl. 301—13 R 1 Claim

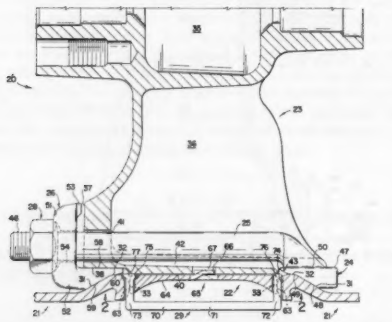


A dual rim and wheel assembly including as clamping elements a series of axially inner clamp means and a series of axially outer clamp lugs to cooperatively engage the mounting flanges of dual rims separated by a spacer. Each set of clamp means and a clamp lug is supported by a common fastening element extending axially through the wheel. The fastening elements carry fastening means which when tightened draw the clamp means and clamp lugs together to seat the rim flanges and assure lateral alignment. Means are provided so that selected clamp lugs are first bottomed out against the wheel when the fastening means therefor are tightened to minimize radial runout when the remaining fastening means are tightened.

3,811,736
TORQUE TRANSMITTING MEANS FOR A DUAL RIM, SPACER AND WHEEL ASSEMBLY

Robert A. De Regnaucourt, Centerville, Ohio, assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed July 25, 1972, Ser. No. 274,998
Int. Cl. B60b *23/00*
U.S. Cl. 301—13 R 8 Claims

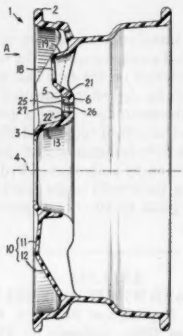


A dual rim, spacer and wheel assembly including as clamping elements a series of axially inner clamp means and a series of axially outer clamp lugs to cooperatively engage the mounting flanges of dual rims separated by the spacer. Each set of a clamp means and a clamp lug are supported by a fastening element extending axially through the wheel. The fastening elements carry fastening means which draw the clamp means and the clamp lugs together to seat the rim flanges. The assembly also has a torque transmitting means providing a positive driving connection between the inner rim-spacer-outer rim mounted on the wheel by the clamping elements.

3,811,737
REINFORCED RESIN WHEEL

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison Sociale Michelin & Cie, Clermont-Ferrand, France

Filed Sept. 27, 1972, Ser. No. 292,602
Claims priority, application France, Oct. 4, 1971, 71.35741
Int. Cl. B60b *5/02*
U.S. Cl. 301—63 PW 9 Claims

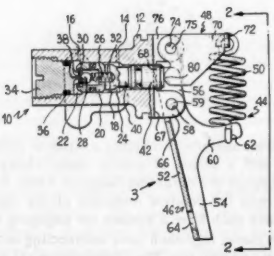


A wheel of reinforced resin comprises a disc formed with a plurality of fastening holes facilitating attachment of the wheel to a hub, and plates of rigid material embedded in the disc and formed with bores aligned with the fastening holes. The plates have an outer face that extends out at least as far as the immediately surrounding portions of the outer face of the disc.

3,811,738
BRAKING PRESSURE REGULATING DEVICE FOR A VEHICLE

Jean-Jacques Carre, Montreuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Jan. 24, 1973, Ser. No. 326,349
Claims priority, application France, Feb. 2, 1972, 72.03247
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R 4 Claims



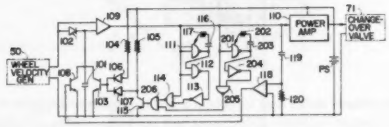
A device for regulating braking pressure, for example for controlling the rate of pressure rise in some of the brakes of a

vehicle under varying load conditions of the vehicle. The device includes a pressure correcting valve adapted to be connected to the sprung part of the vehicle and a force transmitting mechanism adapted to be connected to the chassis. This mechanism is composed of two levers interconnected by draw springs. One of the levers, when at rest, engages an abutment fixed relative to the housing of the correcting valve. The other lever exerts a force on the movable member of the valve.

3,811,739
BRAKE SYSTEM WITH SKID CONTROL

Akira Nakamura; Hiroshi Arai, and Jun Ohta, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Aug. 5, 1971, Ser. No. 169,401
Claims priority, application Japan, Aug. 8, 1970, 45-69024
Int. Cl. B60t *8/10*
U.S. Cl. 303—21 BE **36 Claims**



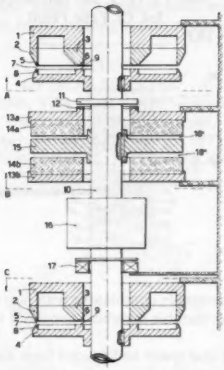
In the apparatus disclosed a wheel velocity detector detects the velocity of a wheel on a vehicle that is being slowed down by a brake. A control circuit constrains a pressure regulator to decrease the pressure in the brake fluid that applies the braking force when the control circuit determines that skidding becomes likely. In the control circuit the velocity detector charges a capacitor to a reference velocity level just below the wheel velocity level. A first adjusting circuit allows the capacitor to discharge at a maximum first rate. Thus if the wheel velocity decreases beyond that maximum deceleration rate the wheel velocity may become less than the reference level. A comparator responsive to the wheel velocity detector and the capacitor level responds to the reference level exceeding the wheel velocity level by issuing a pressure reducing pulse to the pressure regulator. The pulse actuates a second adjusting circuit that increases the discharge rate of the capacitor for a given period of time. Thereafter the second adjusting circuit is inactivated and the first rate is reestablished. When, as a result of reduced pressure and braking force, the wheel velocity increases beyond the decreasing reference velocity the pressure reducing pulse ends. A third adjusting circuit measures a period of time from the onset of the pulse longer than the beforementioned time period to reestablish the second rate of discharge after the reestablishment of the first rate, in the event that the wheel velocity level does not exceed the reference level by that time. A setting circuit responds to the cessation of the pressure reducing pulse by momentarily discharging the capacitor to reestablish the differences between the wheel velocity level and the reference level.

3,811,740
SELF-CENTERING ROTARY MAGNETIC SUSPENSION DEVICE

Giancarlo Sacerdoti; Aldo Catitti, and Luciano-Luigi Soglia, all of Rome, Italy, assignors to Comitato Nazionale Per L'Energia Nucleare (CNEN), Rome, Italy

Filed Apr. 24, 1972, Ser. No. 246,938
Claims priority, application Italy, Apr. 24, 1971, 49943/71
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **6 Claims**

A self-centering magnetic device for suspensing rotating bodies which device comprises two suspension and centering units spaced along the rotation axis and one axial balancing unit interposed between said suspension and centering units which are known per se. The axial balancing unit comprises two identical magnetic elements each of which consists of a number of identical permanent magnets arranged in a starlike

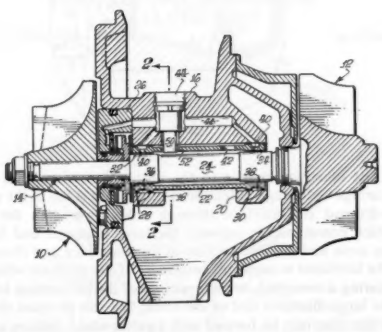


pattern around the rotation axis; these magnets are magnetized all parallel to the axis but one in one direction and the adjacent two in the opposite direction; a conductive disk is provided between the magnetic elements which disk during the suspended body rotation is forced towards a position intermediate between the magnetic element due to a reciprocal repulsive action between each magnetic element and the disk.

3,811,741
BEARING

Charles E. McInerney, Torrance, and Olgierd S. Winiarz, Granada Hills, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 26, 1972, Ser. No. 318,000
Int. Cl. F16c *33/66*
U.S. Cl. 308—122 **4 Claims**

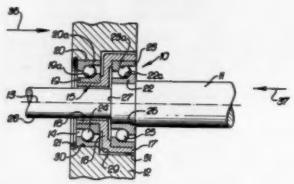


A bearing having a substantially free floating bushing prevented from rotation but without radial restraints.

3,811,742
REDUNDANT BEARING

Joseph G. Rosales, Gardena, Calif., assignor to Donald M. Ackley, Hermosa Beach, Calif.

Division of Ser. No. 163,811, July 19, 1971. This application Nov. 13, 1972, Ser. No. 305,932
Int. Cl. F16c *19/00*
U.S. Cl. 308—183 8 Claims



A bearing assembly combinable with inner and outer coaxially relatively rotatable members annularly spaced apart comprises:

a. a ring in said space and spaced from said members to be rotatable relative thereto about said axis,

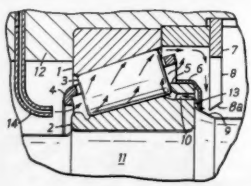
b. first inner and outer annular races respectively on the outer member and the ring and first rolling bearings engaging said first races, and second inner and outer annular races respectively on the inner member and the ring and second rolling bearings engaging said second races, and the races and bearings characterized in that loading is transmitted between said members via said races and bearings and

c. there being structure transmitting force acting to pre-load said races and bearings in an axial direction.

3,811,743
ROLLER BEARING LUBRICATION

Frederick James Wren, Northampton, England, assignor to The Timken Company, Canton, Ohio

Filed June 8, 1972, Ser. No. 261,057
Claims priority, application Great Britain, June 16, 1971, 28322/71
Int. Cl. F16c *1/24*
U.S. Cl. 308—187 17 Claims

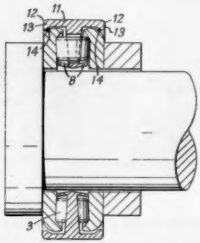


The invention relates to the lubrication of tapered roller bearings operating at high speed. Lubricant is fed to the roller-end/thrust rib interface through holes formed in the cone which communicate between the large diameter end face of the cone and the intersection of the cone race and thrust rib. The lubricant is supplied, externally of the shaft on which the bearing is mounted, to the openings of the lubricating holes in the large diameter end of the cone. For this purpose this end of the cone may be formed with a gutter which defines a space opening radially inwards and to which lubricant is fed either directly or by centrifugal force, the lip of the gutter extending inwardly to a diameter which is less than the diameter of a circle circumscribing the openings of the lubricating holes. In another embodiment the large diameter end of the cup may be provided with an enclosure member having a radially inner end portion positioned adjacent the circle circumscribing the openings of the lubricating holes which directs lubricant passing through the bearing into the openings.

3,811,744
ROLLING BEARINGS

Frederick James Wren; Eric Frank Instone; John Oliver Alford Hunt, and Alan John Wright, all of Northampton, England, assignors to The Timken Company, Canton, Ohio

Filed Jan. 19, 1973, Ser. No. 325,161
Claims priority, application Great Britain, Jan. 20, 1972, 2871/72
Int. Cl. F16c *33/38*
U.S. Cl. 308—235 10 Claims

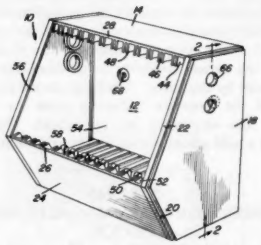


A flat tapered roller thrust bearing has a cage provided with axially directed lips which engage the opposed faces of the races and seal the bearing. The cage may also be provided with axially extending flanges which are shaped to enclose the outer diameter of the races so as to hold the races together.

3,811,745
CASSETTE CARRIER

Edward J. Cylke, Rt. 1, Box 283, Ellijay, Ga.

Filed Sept. 29, 1972, Ser. No. 295,990
Int. Cl. A47f *1/04*; F16b *12/00*
U.S. Cl. 312—13 10 Claims

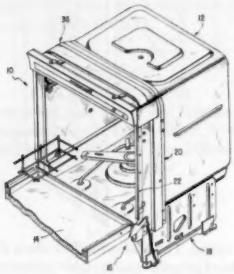


A carrier rack cabinet has an opening restrictively receiving tape cassette bodies at a predetermined angular orientation relative to a back wall of the cabinet housing. Spring elements yieldably limit insertion of the cassette bodies to positions from which they may be displaced in two stages to reference positions and permanent storage positions abutting the back wall of the housing.

3,811,746
TORSIONALLY REINFORCED, SKELETAL SUPPORT FRAME FOR PLASTIC TUBS

Richard L. Butsch, and Bernard J. Brezosky, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 19, 1972, Ser. No. 319,200
Int. Cl. A47b *77/06*
U.S. Cl. 312—228 **1 Claim**

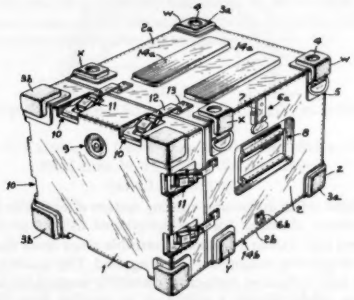


A unipartite plastic tub is employed in a front loading dishwasher in substitution for the usual solid, lined or coated metal tubs. The disclosure relates to the particular positionment of torsional reinforcing members to the upper and/or lower sides of a generally rectangular, skeletal support frame for the plastic tub.

3,811,747
TRANSIT/COMBINATION CASE PROVIDING UNIQUE LATCH ACCESSIBILITY AND NOVEL STACKING AND LATCHING FEATURES

Herbert L. Levin, Wyckoff, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 10, 1972, Ser. No. 233,473
Int. Cl. B65d *21/00*
U.S. Cl. 312—308 **16 Claims**

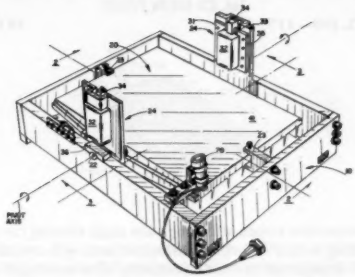


This disclosure describes improvements in transit/combination case design. The transit/combination case cover latches are mounted in angled recesses on each of the four sides of the case cover to permit easy removal thereof from the front when stacked with other cases. Novel arrangements of cover latching mechanisms which are multi-functional to provide a hinging capability are disclosed which are operable in the angled recesses of the cover. Multi-functional case body reinforcement and stacking facilities are included in the form of complementary elongated raised portions and depressions in the top and underside of the case body respectively, which serve the double utility on the inner surface of the case bottom of being slides, or of providing bases therefore, to facilitate easy removal of the case contents. Provision is also made for pivotable cover latch mechanisms which provide the additional function of intercase latching when in the stacked mode. In a preferred embodiment of latch mechanism having hinging capability and "round-the-corner" operation required from the mounting thereof in the angled recesses of the case cover, the latch hook is utilized as the tension member of the pivot arrangement, while the compression member of the pivot arrangement forms an integral part of the latch itself.

3,811,748
OPTICAL SCANNER

Robert L. Treuthart, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 110,081, Jan. 27, 1971, abandoned.
This application Oct. 2, 1972, Ser. No. 293,953
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **26 Claims**

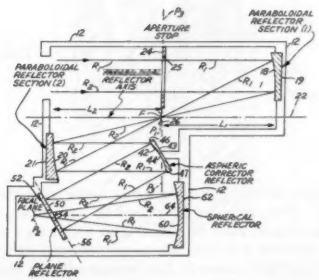


The optical scanner is designed with a system of torquing coils symmetrically distributed over the rear face of the scanning mirror about the mirror's pivot axis. Each torquer coil is disposed within air gaps of an array of permanent magnets so that current pulses in each of the coils produce a push-pull torque impulse on the mirror. The torquer structure is designed for optimal distribution of torquing impulse over the mirror surface to maximize the torquing effect and to minimize the effect of impulse shock which causes mirror bending and acoustic mode patterns in the mirror reflecting surface.

3,811,749
WIDE FIELD REFLECTIVE OPTICAL APPARATUS

Irving R. Abel, Lexington, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 12, 1972, Ser. No. 297,028
Int. Cl. G02b *17/00*
U.S. Cl. 350—55 **16 Claims**



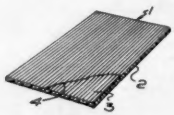
The disclosure describes a wide field reflective optical system comprising an afocal fore telescope and an imaging

system. The afocal telescope comprises first and second confocal paraboloidal reflectors, an aperture stop located in front of the first reflector at a distance equal to its focal length, and a field stop located at the common focal point of the reflectors. The imaging system is an improvement of the Schmidt principle and comprises an aspheric corrector reflector that reflects radiation from the second paraboloidal reflector onto a plane reflector. The plane reflector is located in front of a spherical reflector that focuses radiation at its focal plane through an aperture in the plane reflector.

3,811,750
PROJECTION SCREENS

James Albert Coulthard, Sheffield 10, England, assignor to Marie Luise Batzner Coulthard and David Malcolm Pearson, both of Sheffield, England

Filed July 18, 1972, Ser. No. 272,868
Int. Cl. G03b 21/60
U.S. Cl. 350—117 **16 Claims**

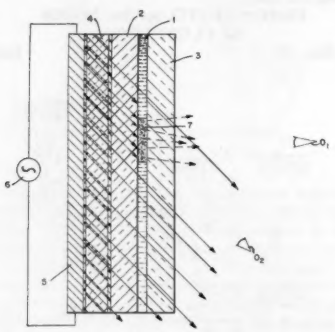


A projection screen affording wide angle viewing comprises a backing with a relfective hairline surface, with a matt overlay of transparent material consisting of a coating of a pigmented solution of a modified vinyl acetate/vinyl alcohol copolymer in a mixture of ketones and hydrocarbons to afford a sharp and brilliant picture in daylight, or with an overlay consisting of a transparent plastics film having a brushed finish on the surface remote from the backing, with the lines of both materials extending in the same direction to afford even wider angle viewing in subdued lighting or total darkness.

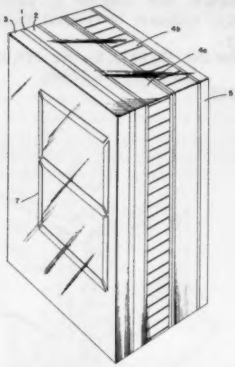
3,811,751
SELF-ILLUMINATED LIQUID CRYSTAL DISPLAY PANEL

Gary D. Myer, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 2, 1973, Ser. No. 347,304
Int. Cl. G02f 1/28
U.S. Cl. 350—160 LC **4 Claims**



A self-illuminated liquid crystal display panel has an electroluminescent panel behind a liquid crystal layer with two layers of micro-louvered light control film sandwiched between the panel and the liquid crystal layer in order to direct the light prior to selective scattering in activated regions

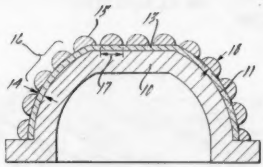


of the liquid crystal. The embodiments show dark information on a bright background and bright information on a dark background.

3,811,752
LIGHT REFLEX-REFRACTING COATING SYSTEM FOR COLORING METALS

Robert C. Jaklevic; John J. Lambe, both of Birmingham; Mati Mikkor, Ann Arbor, and William C. Vassell, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 28, 1972, Ser. No. 266,890
Int. Cl. G02b 5/28
U.S. Cl. 350—164 **6 Claims**



A light reflex-refracting coating system effective to provide a resonant chamber for wavelengths of light desired to be trapped and transmit a selected sensible color from the object upon which the coating system is applied. The coating system has a base reflective surface, a dielectric coating such as aluminum oxide, having a thickness no greater than 500 angstroms, and an outer coating such as indium or tin, which is interrupted (such as by droplet formation in the thickness range of 500–10,000 A) to complete a resonant chamber.

3,811,753
COATED OPTICAL COMPONENT MADE OF PLASTIC

Fumio Onoki, Tokorozawa, and Hajime Kamiya, Kokubunji, both of Japan, assignors to Hoya Lens Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1972, Ser. No. 283,329
Claims priority, application Japan, Sept. 1, 1971, 46-79253
Int. Cl. G02b 1/10
U.S. Cl. 350—175 NG **3 Claims**

An optical component made of plastics, wherein only one

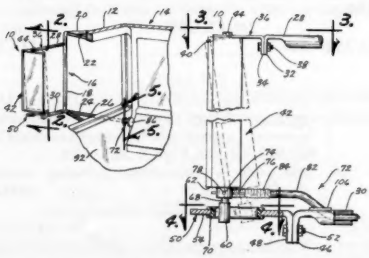
surface of a plastic substrate has an evaporated coating thereon, said coating having a thickness of approximately 1μ

to 10μ and being of a vitreous material which consists essentially of silicates such as SiO and SiO_2.

3,811,754
CORRECTING LENS
Albert Maxwell Morrell, and Frans van Hekken, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.
Filed Oct. 18, 1972, Ser. No. 298,642
Int. Cl. G02b *3/04*
U.S. Cl. 350—189 **7 Claims**

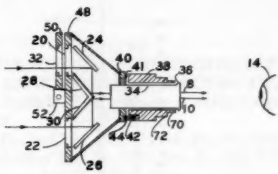
A correcting lens for use in the formation of a color television picture tube screen that is excitable by an electron beam comprises a plurality of individually contoured elements that extend from a point common to all elements to an edge of the lens. Adjacent elements are separated by boundaries and all boundaries extend radially outward from the common point. Each element is individually contoured to direct light onto predetermined paths of the electron beam toward a similarly shaped corresponding area of the screen.

3,811,755
REMOTELY CONTROLLED DAY-NIGHT OUTSIDE TRUCK MIRROR
James W. Carson, 204 Center Ave. South, Mitchellville, Iowa
Filed June 26, 1972, Ser. No. 266,230
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **9 Claims**



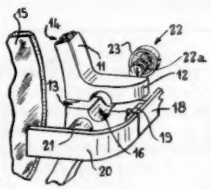
A vertically positioned mirror unit is positioned on a mounting bracket connected to the cab door of a truck. The upper arm of the mounting bracket includes an end portion of spring material to normally maintain the mirror in a first position. A slot is provided in the outer end of the lower support arm, and a pin on the lower end of the mirror unit is received in the slot. A control cable is connected to the pin, and the cable extends through the lower mirror support arm into the cab of the truck. A lock means is provided in the control cable for selectively locking in the mirror at a desired angle against the spring action of the upper support arm. The mirror material is day-night non-glare.

3,811,756
DUAL IMAGE REFRACTION TESTING DEVICE
Willis J. Apple, 1202 Orlanda Ave., Memphis, Tenn., and Wendell W. Anderson, 821 S. Park Ave., Memphis, Tenn.
Filed Dec. 7, 1972, Ser. No. 312,879
Int. Cl. A61b *3/02*; **G02b** *21/18*
U.S. Cl. 351—17 **6 Claims**



A device for receiving light from a single source and producing two parallel image outputs having equal intensity. Totally reflective mirrors receive light from the source through lenses and reflect the respective images to emerge from the device at approximately 8 millimeters separation. One lens is mounted in each light path and a third lens is rotatably mounted for alternate use in conjunction therewith whereby both images may be presented through spherical lenses or cross cylinder lenses depending upon the position of the third lens. The lenses and reflective mirrors may be rotated to permit examination of an eye for oblique astigmatism.

3,811,757
METHOD AND APPARATUS FOR CLAMPING A SPLIT COLLAR CLOSING DEVICE
Henri Guillet, 2 Bd Georges Cleminceau, and Robert Louvet, 26, rue dis Burgandis, both of Oyonnax, France
Filed Oct. 12, 1972, Ser. No. 297,002
Claims priority, application France, Oct. 18, 1971, 71.38157
Int. Cl. G02b *21/24*
U.S. Cl. 351—90 **15 Claims**



The disclosure refers to an open ring device used for instance for mounting of eyeglasses or spectacles. The ring device has a slit which determines two ends. In each end there is recessed an annular groove, one half into the first end and another half into the second end. A washer having a circular projection fits into the annular groove to hold the first end of the device against its second end. The body of a screw passes through a central bore provided in the washer to co-act with a screw-threaded hole co-axial to the annular groove and

located for one-half in said first end and for another half in said second end, while the head of the screw holds the washer confined into the annular groove.

The body of the screw can be screwed into a sleeve which is located in a hole which is not screw-threaded, said sleeve having a flanged portion abutting against the side of the ring ends opposite from the annular groove.

3,811,758

CARTRIDGE-LOADED MOTION PICTURE PROJECTOR

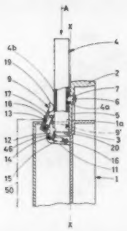
Wolfgang Riedel, Winnenden, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Aug. 4, 1972, Ser. No. 277,930

Claims priority, application Germany, Aug. 6, 1971, 2139416; May 23, 1972, 2224968

Int. Cl. G03b *23/02*

U.S. Cl. 352—72 **14 Claims**



The housing of a motion picture projector has a chamber for a portion of a film-containing cartridge. The inlet of the chamber is surrounded by walls at least one of which extends into the path of movement of a cartridge into the chamber to be displaced by and to thereupon bear aginst the inserted cartridge, either owing to its resiliency or under the action of a spring. The movable wall can be moved to a closing position in which it closes the inlet and it can be held in the closing position by a cover for the housing or by a locking bolt. The movable wall can constitute a centering plate for the inserted cartridge and can be mounted for movement in and counter to the direction of insertion of cartridges into the chamber.

3,811,759

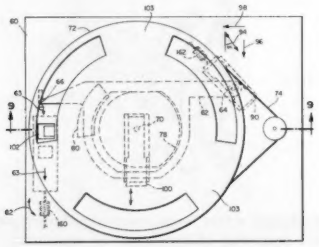
DUAL FILM PICTURE VIEWER

Robert William Johnson, Levittown, and Irvin Paul Shanker, Huntingdon Valley, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 9, 1973, Ser. No. 349,017

Int. Cl. G01b *41/00*

U.S. Cl. 352—79 **5 Claims**



A compact device projects Standard 8 and Super 8 film on a self contained screen. The films are continuous and are contained in individual film cartridges. Insertion of the film cartridge serves to adjust the viewer for the particular film contained therein.

The adjustments include setting of mask size, mask position, image position on screen, stopping point of the film advance claw, adjustment of film advance stroke and lateral position of the film advance claw. The viewer will advance the film even when the film advance opening is damaged.

3,811,760

OPERATING MECHANISM FOR MOTION PICTURE PROJECTORS

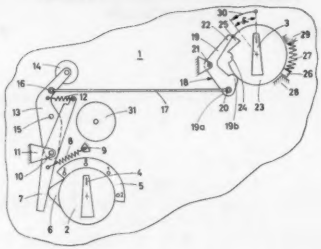
Helmut Rube, Grunbach, and Fritz Krumbein, Stuttgart-Moehringen, both of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Jan. 19, 1973, Ser. No. 325,013

Claims priority, application Germany, Jan. 21, 1972, 2202778

Int. Cl. G03b *1/56*

U.S. Cl. 352—157 **18 Claims**



A motion picture projector wherein the setting for forward or reverse transport of film are selected by a first rotary knob and the film threading unit is started in response to turning of a second rotary knob from an inoperative position. A blocking pawl holds the second knob against movement from the inoperative position whenever the first knob is out of its starting position in which the claw pull-down is idle. The second knob is held in its operative position by a detent which is rigid with the blocking pawl. The detent is disengaged from the second knob by a roller of the film threading unit which is shifted by the film upon completion of a threading operation whereby a spring returns the second knob to its inoperative position. The actuation of the film threading unit can be interrupted by manually rotating the second knob from its operative position.

3,811,761

DRIVE MEANS FOR FILM ADVANCING SPROCKETS IN CINEMATOGRAPHIC APPARATUS

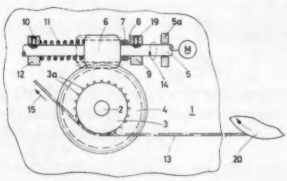
Fritz Krumbein, Stuttgart-Mohringen, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Mar. 9, 1973, Ser. No. 339,942

Claims priority, application Germany, Mar. 14, 1972, 2212164

Int. Cl. G03b *1/00*

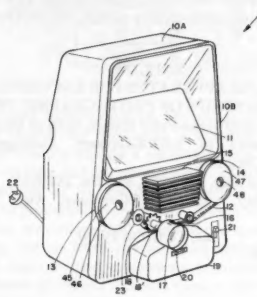
U.S. Cl. 352—166 **11 Claims**



A motion picture camera or projector wherein the film is transported by at least one sprocket which is normally driven

by a worm wheel meshing with an axially reciprocable worm on the shutter shaft. When the resistance which the sprocket offers to rotation in response to increasing tension of film rises to a predetermined value, the worm wheel causes the worm to move axially against the opposition of a prestressed spring whereby one or more jaws on the worm become disengaged from one or more jaws of a clutch element which is secured to the shutter shaft to thereby interrupt the torque-transmitting connection between the shaft and the sprocket. The tension of film increases to a value at which the resistance which the sprocket offers to further rotation overcomes the bias of the spring when the film is completely withdrawn from the supply reel but the sprocket continues to rotate due to inertia of the shutter shaft and after total consumption of one or more loops which the film normally forms between the supply reel and the sprocket.

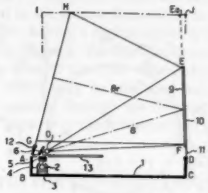
3,811,762
FILM DISPLAY APPARATUS
C. Kenneth Wertz, 601 W. 91st St., Indianapolis, Ind.
Filed Sept. 17, 1971, Ser. No. 181,377
Int. Cl. G03b *21/11, 21/28*
U.S. Cl. 353—26 **6 Claims**



An apparatus for displaying a reelable strip of film. The apparatus has a frame connected to a housing with a plurality of image-directing mirrors mounted to the frame and within the housing. A source of light mounted to the housing directs light through the strip of film to the mirrors in order to display a film image on a display screen mounted to the frame. Each carriage has a spring loaded spool which receives one end of the film. The spring loaded spools are arranged to apply opposite directed forces to the opposite ends of the film thereby placing the film in a state of tension. A sprocket is rotatably mounted to the frame and drivingly engages the film. Rotation of the sprocket by a knob forces the film past the light. As the film is extended from one carriage, the other carriage retracts the film.

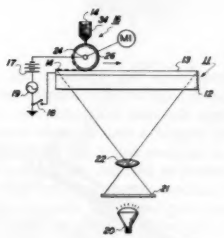
3,811,763
APPARATUS FOR READING MICRODOCUMENTS
Gerard Anatole Cordonnier, Ville d'Avray, France, assignor to Le Materiel Compact, Paris, France
Filed Feb. 1, 1972, Ser. No. 222,623
Claims priority, application France, Dec. 31, 1971, 71.47791
Int. Cl. G03b *21/28*
U.S. Cl. 353—77 **2 Claims**

Apparatus enabling microdocuments to be read by projection on to a translucent screen, using a mirror to reflect the light beam; this, as well as the screen, folds into a case which serves as a base for the apparatus and contains dry cells to feed electricity to the light source. The essential characteristic of this folding "reader" is the use of a miniature bulb in combination with means of recovering the power radiated, making it possible to use dry cells in series with a lower voltage than



usual, and at the same time projecting the part of the apparatus which are close to the light source, from excessive heat.

3,811,764
APPARATUS FOR PHOTOELECTROPHORETIC IMAGING USING A PERIODIC ELECTRIC FIELD
Edward Forest, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 764,715, Oct. 3, 1968, Pat. No. 3,657,091.
This application Apr. 20, 1971, Ser. No. 135,773
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 P **7 Claims**

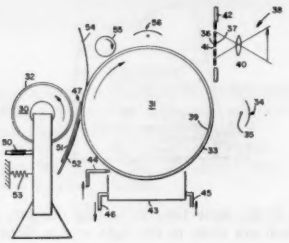


Method and apparatus for improving image density, contrast and quality and photographic speed in an electrophoretic imaging system utilizing a particulate suspension for forming the image. The method and apparatus stress a thin layer of the electrophoretic suspension of particles in a carrier on an electrode during imaging by applying a high frequency pulsed or varying electric field across the imaging suspension.

3,811,765
CONTACT-TRANSFER ELECTROSTATIC PRINTING SYSTEM
David E. Blake, Woodside, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.
Filed Jan. 21, 1972, Ser. No. 219,616
Int. Cl. G03b *15/00*
U.S. Cl. 355—3 R **38 Claims**

A system and method for electrostatic printing in which an electrostatic latent image charge configuration is established on the non-conducting surface of a transfer medium and developed with a liquid toner suspension in the form of toner marking particles suspended in a fluid. The liquid from the liquid toner suspension applied to the transfer medium is removed leaving toner particles electrostatically retained against the surface of the transfer medium in accordance with the electrostatic latent image charge configuration. A print receiving medium is compressed or pressure biased by means

of a roller or other means having a surface preferably resilient against the transfer medium and the compressed print receiving medium and deposited toner particles are contact heated



by the pressure roller or means in the transfer area so that toner particles are melted and fixed to the print receiving medium in the configuration of the electrostatic latent image.

3,811,766

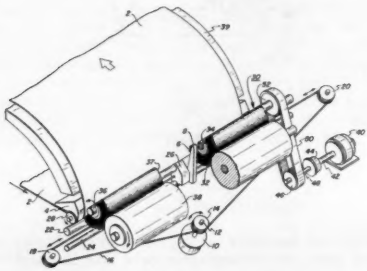
DEVELOPING APPARATUS

Thomas K. Robinson, Jr., Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,694

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **10 Claims**



Developing apparatus wherein an electroscopic marking particle loaded applicator is moved to develop charge patterns, the applicator having such a configuration that in a first or developing position it effects deposition of the marking particles on the patterns and in a second or viewing position it does not obstruct direct viewing of the developed patterns.

3,811,767

PORTABLE COLLAPSIBLE DARKROOM

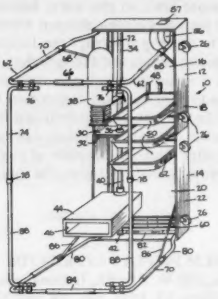
Herbert L. Purnell, 1700 York Ave., New York, N.Y.

Filed June 12, 1973, Ser. No. 369,161

Int. Cl. G03b *27/32*

U.S. Cl. 355—27 **7 Claims**

A portable, collapsible darkroom comprising a housing formed of two hingedly attached sections opening up to overlie one another on the same plane, with a framework disposed within the housing and extensible therefrom to form, with the housing, a substantially rectangular enclosure, and a light-proof canopy enclosing the framework and housing interior. The housing interior supports a photographic enlarger and baseboard secured to, and vertically adjustable in respect of, a pair of aligned posts, and a series of developing trays removeably supported on the housing interior. Air circulation is provided by a blower and baffled vents, and light by a fixture, both secured to the housing interior and wired, with the enlarger, to a source of electricity outside the darkroom.



3,811,768

METHOD AND APPARATUS FOR ENCODING AND TREATING STRIPS OF PHOTOGRAPHIC PRINT

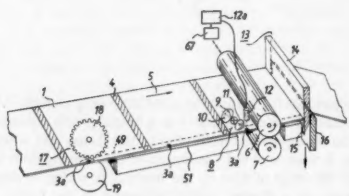
Wolfgang Zahn, and Hans-Peter Huber, both of Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1972, Ser. No. 282,035

Claims priority, application Germany, Aug. 21, 1971, 2141950.1

Int. Cl. G03b *29/00*

U.S. Cl. 355—29 **21 Claims**

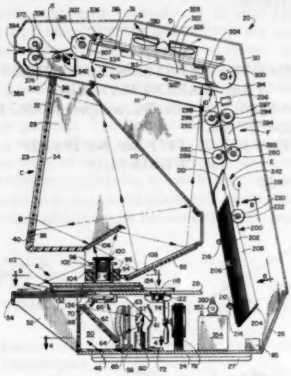


A strip consisting of a row of photographic prints and a marginal portion which extends along one side of the row of prints is transported lengthwise past a photoelectric scanning device which produces signals in response to detection of successive indicia encoded on the marginal portion at predetermined distances from successive boundaries between neighboring prints. The signals are used to arrest the strip at intervals, always in such position that a boundary between a pair of neighboring prints is located in the range of a movable knife which separates the prints from each other. A perforating or cutting unit is mounted ahead of the scanning device or between the movable knife and the scanning device to perforate or completely separate the marginal portion from the row of prints. If the marginal portion is to be completely separated from the row of prints ahead of the scanning device, the separated sections of the marginal portion are guided toward and past the scanning device in unchanged spatial relationship relative to the row of prints. The indicia are exposed on the marginal portion during the making of prints, and the strip is thereupon developed prior to scanning, severing and separation of the marginal portion.

3,811,769
VIEWER-COPIER APPARATUS

Stanley W. Heidenbrand; David L. Johnson, both of Dallas, and Neil H. Mote, Richardson, all of Tex., assignors to Seaco Computer-Display Incorporated, Garland, Tex.

Filed July 28, 1971, Ser. No. 166,953
Int. Cl. G03b 27/70
U.S. Cl. 355—45 15 Claims

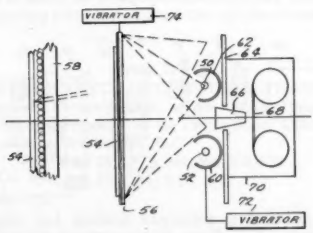


An improved combination viewer-copier apparatus having an optical system for projecting a selected image from a microimage bearing film on a viewing screen sufficiently enlarged for viewing and for projecting an enlarged image on a record medium at an exposure position which is later developed to produce copies thereof. A light filtering means is provided for preventing light entering the apparatus through the viewing screen from reaching the undeveloped record medium. A sheet feeding apparatus is provided for feeding individual sheets of record medium from a stack containing a plurality of sheets and eventually conveying said sheets to the exposure position. A sheet handling means is also provided at an exposure position to hold the sheets in position by means of a pressure differential created across the paper. A developing means is also provided for contacting the paper with a continuously agitated developer fluid by means of a nozzle, pump and a moving roller. A pair of loaded squeeze rollers having a non-cylindrical shape are utilized after the application of the developer to remove excess fluid from the paper.

3,811,770
CAMERA

Rene Baus, Jr., and Lewis Epstein, both of 517 S. Carrollton Ave., New Orleans, La.

Filed June 15, 1971, Ser. No. 153,385
Int. Cl. G03b 27/54
U.S. Cl. 355—67 22 Claims

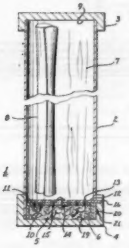


A method and apparatus for increasing the effective light gathering power of a camera, such as a document camera, wherein a plurality of lenses, such as spherical or cylindrical, are disposed adjacent the surface to be reproduced so that the lenses focus incident light onto a reduced document area from which it is reflected back through the transmitting lenses and directed to a film along paths which are relatively close to the path it travelled to the lenses. According to a further aspect of the invention film having a higher speed is disclosed with such lenses mounted adjacent the film for focusing incident light onto a reduced area of the film. Alternately or in addition, a layer of such lenses may be disposed adjacent the film for reflecting light passing through the film back along its path to the film. Other aspects of the invention are set forth below.

3,811,771
APPARATUS FOR EXPOSING AND DEVELOPING PHOTOSENSITIVE SHEETS

Gary R. Hays, 5042 N. 8th St., Phoenix, Ariz.

Filed Dec. 26, 1972, Ser. No. 318,024
Int. Cl. G03d 7/00
U.S. Cl. 95—89 G 7 Claims

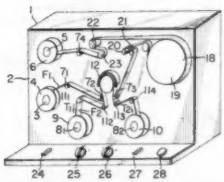


Apparatus for exposing and developing light sensitized materials in accordance with the diazo process. The apparatus for exposing light sensitized materials includes a light tight material storage chamber and a hinged frame adjacent one side of the chamber. The frame encloses a transparent medium and the paper to be exposed is placed intermediate the storage chamber and the transport medium. The apparatus for developing the exposed light sensitized paper includes a hollow cylinder having a removable air tight cap on one end. A spillproof ammonia reservoir, storing the ammonia in absorbent material, is disposed within the other end of the cylinder. An apertured rotatable gate is attached to the reservoir to selectively permit the ammonia fumes generated within the reservoir to permeate the interior of the hollow cylinder.

3,811,772
FILM REPRODUCTION DEVICE

Mitsutoshi Kanayama, and Motofumi Konishi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,380
Claims priority, application Japan, Mar. 3, 1972, 47-22139
Int. Cl. G03b 27/10, 27/30
U.S. Cl. 355—111 5 Claims



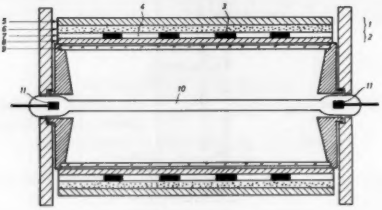
A high speed film reproduction device for reproducing an information image recorded on an original film onto a

reproduction film, including a first original film drive assembly mounted ahead of an exposure assembly with respect to the travelling direction of the original film, a second original film drive assembly mounted subsequent to the exposure assembly with respect to the travelling direction of the original film, and drive control apparatus for selectively equalizing the driving forces of the drive assemblies or setting the driving force of the first drive assembly smaller than that of the second drive assembly.

3,811,773
THERMOGRAPHIC COPYING

Marcel Nicolas Vrancken, Parklaan, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 560,314, June 24, 1966, abandoned. This application June 1, 1971, Ser. No. 149,039
Claims priority, application Great Britain, Nov. 26, 1965, 50441/65
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **12 Claims**

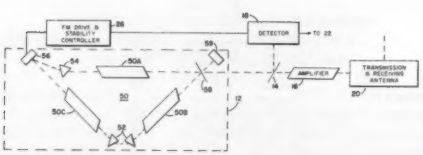


A process for the reproduction of a transparent original having infrared radiation and visible light absorptive image markings thereon by exposing the original to infrared radiation and/or light while the image markings are arranged in heat-conductive contact with a recording layer composed at least 80 percent by weight of gelatin and having distributed therethrough a finely divided substance transforming absorbed visible and infrared radiation into heat, for a period not longer than 10^{-1} second and developing the recording layer by washing with water to remove the gelatin in the area corresponding with the non-image area of the original.

3,811,774
CONTINUOUS WAVE RADAR FOR RANGE AND VELOCITY MEASUREMENT

Thomas E. Honeycutt; William F. Otto, and Charles M. Cason, III, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 20, 1972, Ser. No. 245,995
Int. Cl. G01c *3/08*; G01p *3/36*
U.S. Cl. 356—5 **8 Claims**

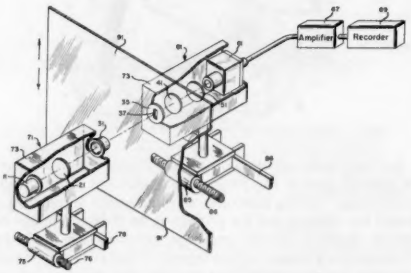


A frequency modulated, continuous wave radar range measurement system using a laser oscillator is disclosed. A ring laser, carbon dioxide (CO_2), laser oscillator allows target range and velocity measurement as either an active or a passive system. Nonlinear variation of laser output power is obtained by mixing the reflected signal with the energy within the laser cavity. In an active system the resulting beat frequency is sensed by a local receiver-detector and reduced to obtain the range and velocity data at the transmission site. The beat frequency is also superimposed on the transmitted laser beam and is therefore available at the target causing the beat frequency and is available to other detectors which may be positioned to receive a portion of the reflected energy, affording a passive system.

3,811,775
POLARISCOPE FOR DETERMINING STRESS IN A TRANSPARENT MATERIAL

Munther Abu-Saud, Jeannette, Pa., assignor to ASG Industries Inc., Kingsport, Tenn.

Filed June 21, 1972, Ser. No. 264,827
Int. Cl. G01b *11/18*
U.S. Cl. 356—35 **3 Claims**

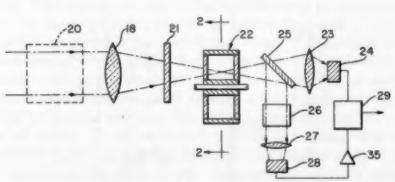


A polariscope is described for detecting stresses in a transparent object. The polariscope comprises means for producing a beam of polychromatic plane polarized light, a condensing lens, an aperture, a quarter-wave retardation plate, analyzing means and a photocell. Changes in stress cause changes in the color and intensity of the light detected. Means are provided for scanning the polychromatic light beam back and forth in one direction across the transparent object that is being studied. Means are also provided for moving the transparent object in a direction transverse to the direction of the scanning light beam. The output of the photocell is applied through an amplifier to a chart recorder in order to produce a plot of the stresses in the object with respect to their position.

3,811,776
GAS ANALYZER

Henry H. Blau, Jr., Wayland, Mass., assignor to Environmental Research & Technology, Inc., Lexington, Mass.

Filed Feb. 26, 1973, Ser. No. 336,078
Int. Cl. G01n *21/26*
U.S. Cl. 356—51 **17 Claims**



Gas in a sample region is analyzed in a nondispersive system for the presence of a particular gas of interest by cross-correlating the absorption spectra of the sample and a specimen

of the gas of interest. Radiation is directed through the sample region and a filter for isolating a narrow band of frequencies within the absorption band of the gas of interest, to a radiation detector. The radiation is passed through cells that provide the total energy transmitted at the line or lines of interest and a reference energy transmitted by a region adjacent to the lines of interest and unaffected by changes in absorption in the sample region. In one embodiment this is accomplished by passing the radiation from the filter in rapid succession through three cells typically containing, respectively, an inert gas, the gas of interest at a pressure of about one atmosphere and the gas of interest at approximately two atmospheres pressure, to produce three signals which are normalized by ratioing with three comparable signals taken at the same times by transmitting part of the radiation passed by the three cells, through a reference gas cell. The normalized signals are then combined by a conventional electronic system to give the fractional absorption of the gas of interest in the sample region. An interferometer containing in one leg, a cell containing the gas of interest at a pressure of about two atmospheres, may be located in the radiation path between the cells and the detector.

3,811,777

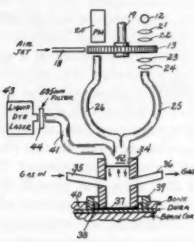
TIME-SHARING FLUOROMETER AND REFLECTOMETER

Britton Chance, c/o Johnson Research Foundation Medical School, Philadelphia, Pa.

Filed Feb. 6, 1973, Ser. No. 330,041

Int. Cl. G01n *21/00*; **G01j** *3/30, 3/48*

U.S. Cl. 356—73 **12 Claims**



A spectrophotometric probe apparatus including a light source, a photomultiplier and a rotary filter wheel, with respective light pipes located to receive excitation light through one filter from the source and to transmit emission or reflectance light through an opposite filter to the photomultiplier. The remote ends of the light pipes are located adjacent to the area of observation and may be secured together to form a bundle. An additional light pipe may be added to the bundle to inject a photolysis flash on the tissue being studied, and the bundle may be attached to a chamber which can be implanted adjacent the living tissue and which is provided with ducts for passing perturbation gases through the chamber.

3,811,778

ISOTOPE-SHIFT ZEEMAN EFFECT SPECTROMETER

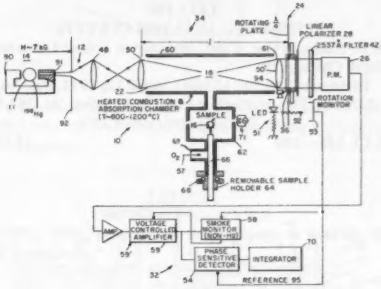
Tetsuo Hadeishi, Berkeley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 28, 1973, Ser. No. 336,579

Int. Cl. G01j *3/30, 3/42*

U.S. Cl. 356—85 **1 Claim**

Apparatus and method employing a beam containing specific Zeeman components for rapidly and accurately detecting the presence of trace amounts of a specific biologically dangerous metal element, such as Hg, that contaminates a host substance, such as food. In one embodiment for detecting Hg in fish, the apparatus comprises first means for heating a fish sample containing mercury to 950°C to form a vapor, second means for transmitting a focused light beam through the vapor in the form of light spectra produced from a mercury isotope in a magnetic field parallel to the light spectra, said spectra containing 2537 A light having specific Zeeman components that are equally scattered and differentially absorbed by the Hg in the vapor, comprising a circularly polarized σ^- monitoring component that is attenuated by absorption by the mercury in the vapor an amount corresponding to the amount of mercury in the sample and a circularly polarized unab-



sorbed σ^+ reference component, said beam then being transmitted through a circular polarization selector for alternately periodically transmitting the respective components passing through the vapor, and a filter for passing only the 2537 A from the transmitted light beam to means for detecting said remaining components after the beam is so transmitted, as a measure of the mercury in the sample. In practice, a rotating quarter (¼ λ) plate and a linear polarizer having a 2537 A filter alternately periodically transmits the respective components to a single photomultiplier for providing a lightweight, portable detector.

3,811,779

APPARATUS FOR ALIGNING A MASK WITH RESPECT TO A SEMICONDUCTOR SUBSTRATE

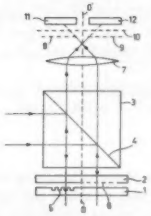
Bernardus Antonius Johannus Jacobs, and Pieter Kramer, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,122

Claims priority, application Netherlands, Jan. 8, 1971, 7100212

Int. Cl. G01b *11/26*

U.S. Cl. 356—172 **5 Claims**



An apparatus for aligning a mask comprising a large number of equal elements with respect to a semiconductor substrate is described. It is stated that for this purpose two patterns are used which each comprise at least three grating-shaped configurations of which two are oriented at right angles to one

another and are spaced from one another by a distance which is small compared with the distance by which they are spaced from a third configuration the groove direction of which is substantially parallel to the line joining it to the two first-mentioned configurations.

It is explained that one pattern is rigidly secured to the substrate and the other pattern is rigidly secured to the mask, images of the two patterns being formed about at the location of a reference pattern which also comprises at least three grating-shaped configurations.

3,811,780

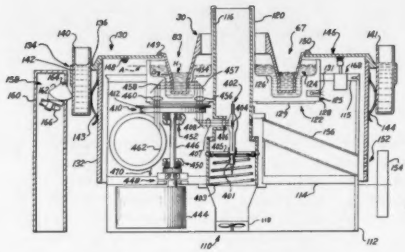
CHEMICAL ANALYSIS CUVETTE

Max D. Liston, Irvine, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 133,081, April 12, 1971, Pat. No. 3,748,044. This application May 3, 1973, Ser. No. 357,063

Int. Cl. G01j *3/46*; G01n *1/10*

U.S. Cl. 356—180 **13 Claims**



Improved components, such as a cuvette, are disclosed in the specification.

3,811,781

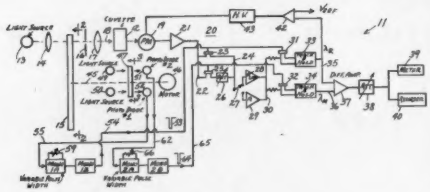
MULTI-WAVELENGTH PHOTOMETER EMPLOYING A ROTATING VARIABLE WAVELENGTH FILTER

George W. Lowy, Silver Spring, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 26, 1973, Ser. No. 326,495

Int. Cl. G01j *3/48*

U.S. Cl. 356—188 **13 Claims**



A multi-wavelength photometer using a two-segment rotating circular variable filter to select the working wavelengths. Selection is made by gating respective integrating circuits receiving signals generated by a light beam passing through the filter and the sample cuvette. The gating signals are produced by variable delay circuits triggered respectively by timing pulses derived from an apertured timing disc mounted on the same shaft as the rotating filter. The timing pulses are generated by spaced photo diodes located adjacent the timing disc and receiving light through the aperture of the timing disc as it passes.

3,811,782

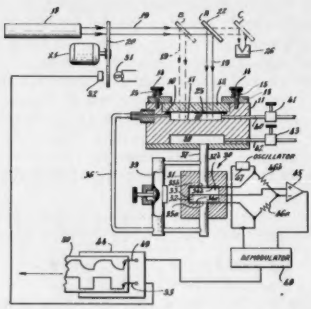
METHOD AND APPARATUS FOR MEASURING THIN FILM ABSORPTION AT LASER WAVELENGTHS

Edwin L. Kerr, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 181,975, Sept. 20, 1971, Pat. No. 3,727,050. This application Apr. 9, 1973, Ser. No. 349,030

Int. Cl. G01n *21/06*; G01b *11/00*

U.S. Cl. 356—201 **10 Claims**



Absorption by thin film, such as an optical coating, of a selected laser wavelength is adapted to be measured by apparatus consisting of a thin test chamber whose diameter is at least several times its thickness. One wall of the chamber is a removable window, the opposite wall is reflective. A pressure measuring instrument, such as a capacitance microphone, is connected to measure the pressure of a gas in the chamber, and a laser having a selected test wavelength has its beam directed through the window into the chamber. The laser beam is chopped at an adjustable rate, and the pressure measuring instrument measures a pressure differential between a reference pressure chamber and the test chamber, there being an adjustable leak across the instrument. The test chamber is filled with a gas that does not absorb the test laser beam wavelength and the window is a material which preferably absorbs as little as possible of the wave-length of interest. The pressure in the chamber is first measured with the laser beam applied through the clear window to obtain the zero of the apparatus; any absorption of the laser wavelength by the window heats the gas by conduction and thus produces a pressure rise. Then a film to be tested is mounted in intimate contact with the inside surface of the window and the laser beam is applied through the film. Absorption of the beam wavelength by the film heats the gas and the window by conduction; when the heat of the gas and window reach a steady state the pressure of the gas in comparison with the "zero" pressure measurement is substantially proportional to the absorption of the film.

3,811,783

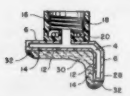
PAINT APPLICATOR

Charles Johnson, 126 Wesley Ave., Portchester, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,070

Int. Cl. A46b *15/00*

U.S. Cl. 401—9 **6 Claims**



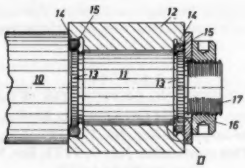
An applicator for applying a liquid coating to a surface which abuts another surface which it is not desired to coat.

The applicator is particularly adapted for painting various parts of window structures. The applicator comprises a reservoir having an outer wall, an inner wall spaced from the outer wall, side walls and end walls. The inner wall has apertures formed therein and the outer surfaces of the inner wall and the end walls are covered with an absorbent pad which becomes saturated with paint as the paint flows through the apertures in the inner wall. The portions of the pad which cover the end walls are made impenetrable by the paint by impregnating those portions with glue or a similar substance. The pad is of sufficient thickness to conform to minor convolutions of the surface. In the particular embodiments illustrated, the reservoir is of a generally L-shaped or inverted U-shaped cross section.

3,811,784
MEANS FOR INTERCONNECTING TWO MACHINE ELEMENTS

Sven Walter Nilsson, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company NV, Amsterdam, Netherlands

Filed Mar. 1, 1972, Ser. No. 230,744
Int. Cl. F16b *39/34;* **F16c** *11/10*
U.S. Cl. 403—2 **12 Claims**



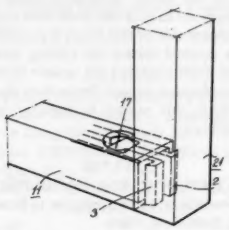
In order to lock two machine elements with respect to each other, an annular void is formed between the two elements, and a correspondingly shaped locking member is forced into said void. To obtain a secure grip between the components, the juxtaposed side walls of the void are provided with knurls or keys, and the locking member is made of a material which is softer than that of the elements. The member will be deformed when driven into the void, but it will not cause any damage to the elements. The member may therefore be removed and a new member be applied after an angular adjustment of the relative position between the elements. The member can be designed not to fill the full peripheral extension of the void, in which case it, when used in a torque transmitting transmission, will serve as a rupture safety device.

3,811,785
INTERCONNECTION ELEMENT SYSTEM

Ruben Jakob Valdemar Hagglund, 570 70 Hogsby, Sweden

Filed Dec. 15, 1972, Ser. No. 315,775
Claims priority, application Sweden, Dec. 17, 1971, 16196/71
Int. Cl. F16b *7/04*
U.S. Cl. 403—255 **5 Claims**

An interconnection element system for rigidly interconnecting substantially hollow, profiled tubes in simple manner by means of concealed interconnection elements. The interconnection elements clamp an extending end of one of the profiled tubes against the other tube, and the two profiled

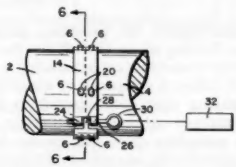


tubes are locked against each other by means of a wedge introduced into the first profile tube and engaging the interconnection elements.

3,811,786
CONNECTING DEVICE

Howard C. Valle, Doylestown, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,156
Int. Cl. F16b *2/08*
U.S. Cl. 403—300 **4 Claims**

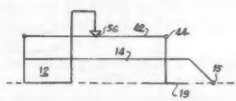


A pair of cylindrical members substantially equal in diameter have a plurality of pins spaced about the periphery adjacent one edge of each cylindrical member. A spring having a ribbon of spring material with adjacent turns set to coil tightly upon each other and openings adapted to register with the pins on the cylindrical members is back wound around the cylindrical members with the pins passing through the openings in the ribbon. The ribbon is releasably secured in this back wound position. Advantageously the ribbon is releasably secured by means including a pin connecting the ends of the ribbon together.

3,811,787
SCREED ATTACHED GRADE REFERENCE MECHANISM

Ronald W. Beaty, Aurora, and Earl D. Martenson, North Aurora, both of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Aug. 7, 1972, Ser. No. 278,299
Int. Cl. E01c *19/48*
U.S. Cl. 404—84 **12 Claims**



A mobile grade reference device is connected to the paving machine for travel therewith, such grade reference device being disposed forwardly of the screed and inboard of the

lateral extremities thereof. A longitudinally extending grade reference beam has the forward end thereof pivotally mounted to the mobile grade reference device at the longitudinal midpoint of the latter, such pivot point being located rearwardly of the pivot axes of the draft arms engaged with the screed. The rearward end of this beam is pivotally mounted to the screed. The control system for raising and lowering the pivot axes of the draft arms has the sensor thereof supported from the screed adjacent to and forward of the forward portion of the screed; this sensor is engaged by a stringline mounted on said beam.

3,811,788

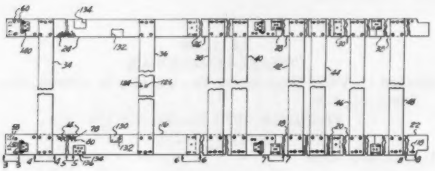
INSTALLATION OF CARGO HANDLING SYSTEM

Leslie Mollon, Southfield, Mich., assignor to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed May 16, 1973, Ser. No. 360,765

Int. Cl. B23b *47/28*

U.S. Cl. 408—72 **9 Claims**



A master drill fixture for providing properly related openings in the flooring of an aircraft for the reception of fastening elements to secure a cargo handling system therein. The master drill fixture is composed of a multiplicity of longitudinally extending rigid bars adapted to be assembled together substantially in end-to-end relationship, a multiplicity of transversely extending cross ties, means for locating a predetermined point on the assembled drill fixture in registration with a locating point in the aircraft, and means for aligning and centering the assembled drill fixture with the center line of the aircraft.

3,811,789

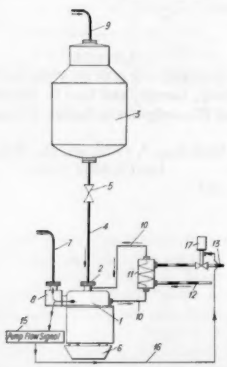
ROTODYNAMIC FLUID MACHINES

Forrest Thomson Randell, Cathcart, Scotland, assignor to Weir Pumps Limited, Cathcart, Glasgow, Scotland

Continuation-in-part of Ser. No. 243,669, April 13, 1972, abandoned. This application July 9, 1973, Ser. No. 366,315

Int. Cl. F01d *1/00*

U.S. Cl. 415—1 **18 Claims**



In a rotodynamic fluid pump installation wherein the pump includes a casing having an inlet and outlet for pumped fluid, leakage fluid such as for example as occurs at the glands and bearing surfaces of the pump is withdrawn from the casing, cooled, and recycled to the pump inlet to reduce cavitation at low pump loads.

3,811,790

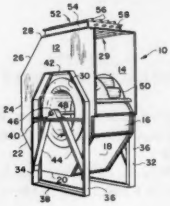
AIR MOVING APPARATUS

Thomas W. Mikulina, La Crosse; Ronald J. Lievens, Onalaska, and George T. Brockman, Stoddard, all of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed May 8, 1972, Ser. No. 251,124

Int. Cl. F04d *29/46, 29/56*

U.S. Cl. 415—145 **1 Claim**



A central station air moving apparatus is disclosed incorporating an irregular heptagonal configuration and an air outlet damper device mounted on one side of the heptagon.

3,811,791

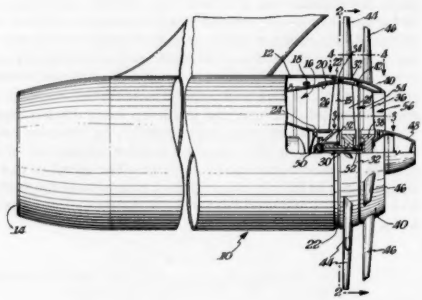
THRUST AUGMENTING DEVICE FOR JET AIRCRAFT

Robert B. Cotton, 1503 Old Orchard Rd., Media, Pa.

Continuation-in-part of Ser. No. 171,197, Aug. 12, 1971, abandoned. This application July 9, 1973, Ser. No. 377,784

Int. Cl. B64c *11/48*

U.S. Cl. 416—129 **9 Claims**

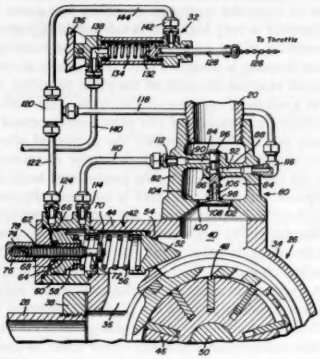


A dual set of counter-rotating impulse turbine wheels having short propeller blades about their periphery are disposed in the exhaust emitted by a jet engine to augment its thrust at lower subsonic speeds by extracting energy from the high velocity gases. The counter rotation minimizes torque loads. The turbine wheels may be closely mounted behind the engine and directly connected thereto or movably mounted for optional retraction out of the path of the exhaust at higher speeds when the jet engine is more efficient.

3,811,792
AUTOMATIC PRESSURE CONTROL SYSTEM FOR PUMPS

William A. Kennedy, Jr., Oklahoma City, Okla., assignor to Corken Pump Company, Oklahoma City, Okla.

Filed June 1, 1973, Ser. No. 366,033
Int. Cl. F04b 49/02
U.S. Cl. 417—28 14 Claims

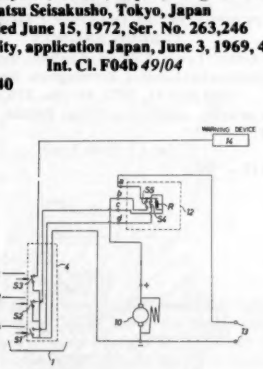


The discharge pressure of a positive displacement pump is increased from a low regulated value to a higher value in response to outflow through a valve-controlled delivery conduit, by flow responsive control of a by-pass valve, the bias of which may be adjustable during pump operation to change the regulated discharge pressure. Flow in the delivery conduit is detected by displacement of a flow reaction disc from a position within the pump outlet port through which continuous fluid communication is established.

3,811,793
SAFETY DEVICE FOR DETECTING WATER LEVEL IN A WATER TIGHT CHAMBER OF AN AMPHIBIAN BULLDOZER

Hideyoshi Kobayashi, Osaka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 15, 1972, Ser. No. 263,246
Claims priority, application Japan, June 3, 1969, 44-51182
Int. Cl. F04b 49/04
U.S. Cl. 417—40 3 Claims

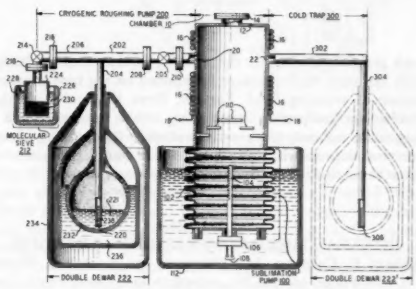


A safety device for detecting water level in a water tight chamber of a radio controlled amphibian bulldozer which has means for detecting the level of leaked water in. A water tight chamber, an electric drain pump is driven by the operation of said means when the water level in the water tight chamber reaches. A predetermined level, a drain pipe connected to the pump drains water in the water tight chamber, and means projected over water surface for warning when the leaking flow rate of water into the chamber exceeds the capacity of the drain pump the warning means may be a lamp or radio transmitting antenna.

3,811,794
ULTRAHIGH VACUUM SUBLIMATION PUMP

La Rue Norman Dunkleberger, Berkeley Heights, and Lawrence Yun Lung Shen, Summit, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 22, 1972, Ser. No. 308,665
Int. Cl. F04b 37/02
U.S. Cl. 417—49 30 Claims



An evacuable chamber includes an upper bell jar portion, which serves as a working space, and in communication therewith a lower pump portion having the shape of a rigid bellows. The bellows is submersed in a refrigerant, such as liquid nitrogen, and surrounds a suitable source of a sublimable getter material, such as titanium-molybdenum filament. The upper portion illustratively has a pair of apertures, one of which communicates with a liquid helium cold trap and the other of which communicates with a roughing pump. In a preferred embodiment the roughing pump comprises in combination a molecular sieve adsorption pump and a cold finger submersible in liquid helium. During operation, the filament is heated above its sublimation temperature to form a thin film of titanium on the interior surface of the bellows. When cooled, the thin film of titanium effectively adsorbs all gases except He and Ne and will additionally adsorb light hydrocarbons, such as methane, if the film is maintained at a temperature below 180 degrees K. The cold trap pumps both He and Ne. The system as a whole is effective not only in producing chamber pressures of at least 10^{-11} Torr in less than ten hours, depending on the volume of the chamber, but also in maintaining that pressure under working conditions at dynamic pumping speeds in the millisecond range.

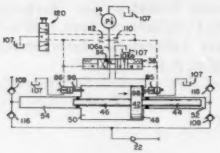
3,811,795
HIGH PRESSURE FLUID INTENSIFIER AND METHOD

John H. Olsen, Vashon, Wash., assignor to Flow Research, Inc., Kent, Wash.

Filed Jan. 12, 1973, Ser. No. 322,956
Int. Cl. F04b 35/00; F01l 25/04
U.S. Cl. 417—53 16 Claims

A pressure intensifying apparatus to deliver a very high pressure stream of water through a nozzle. There is a single working piston having two pressure surfaces of a relatively large area, the working piston being connected to two high pressure pistons each having a pressure surface of a relatively small area. A control valve delivers a high pressure working fluid alternately to opposite sides of the working piston to cause it to reciprocate so that the pressure pistons alternately

deliver water at high pressure to the nozzle. In shifting between its two end positions, the control valve passes through an intermediate position at which a restricted flow passage is provided for the working fluid, this restricted flow passage having an effective cross sectional area relative to the effective area of the discharge nozzle such that the back pressure of the restricted passage of the control valve matches the



back pressure exerted on the working fluid so that a substantially constant back pressure is imposed on the high pressure source of working fluid. Further, there is a valve shifting mechanism comprising two shifting valves, each of which is responsive not only to physical contact by the working piston, but also to pressurization of its related working chamber to cause rapid shifting of the control valve.

3,811,796

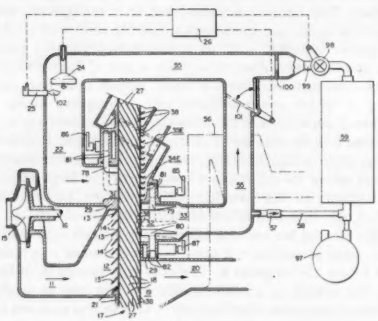
INTEGRAL TURBO-COMPRESSOR WAVE ENGINE

Richard R. Coleman, Jr., Villanova, and Helmut E. Weber, Valley Forge, both of Pa., assignors to General Power Corporation, Paoli, Pa.

Filed Oct. 21, 1971, Ser. No. 191,410

Int. Cl. F04b *11/00*; F02c *3/02*

U.S. Cl. 417—64 **30 Claims**



The present engine includes a heating chamber to produce relatively high temperature, high pressure gases; an intake chamber to provide relatively low temperature, low pressure gases which initially act as scavenging gases; an exhaust chamber into which the spent hot gases are expelled by the scavenging gases; a compressed cool gas chamber into which the compressed cool gases flow with partial expansion; and at least one hot gas expansion outlet or duct into which the high pressure hot gases expand. In addition the present engine includes a compressor-expander rotor having a plurality of rotor chambers, with each of said rotor chambers having an inlet opening and a nozzle with an outlet opening. The compressor-expander rotor is disposed to rotate adjacent to said intake chamber and said heating chamber, to accept into said rotor chambers, cool gases from the former followed by hot gases from the latter. Termination of the flow of cool intake gases from each rotor chamber nozzle outlet initiates a shock wave at the rotor chamber nozzle outlet. A second, normally stronger, shock wave is initiated at the inlet of each rotor chamber as it is exposed to the hot gases flowing from the heating chamber. Each rotor chamber is designed so that before this second shock wave (which is set up by the hot gases entering a rotor chamber already filled with cool gas) reaches the end of its excursion toward the rotor chamber outlet, the shock wave encounters the constricted area, or nozzle, of the rotor chamber. As a result this second shock wave is reflected from the rotor chamber nozzle toward the inlet of the rotor chamber. As a result of this reflected shock wave, the final pressure of both the cool gases and the hot gases within the rotor chamber is very high and is substantially higher than the initial pressure of hot gases flowing from the heating chamber. The rotor housing is designed such that ideally as the reflected shock wave reaches the inlet of the rotor chamber, this inlet is sealed as a result of rotation of the rotor. This well-timed closure prevents expansion of the shock-compressed hot gases back into the heating chamber. As indicated above, as the reflected shock wave traverses the rotor chamber from the constricted section or nozzle, the pressure of both the hot and cool gases in the rotor chamber is substantially increased as compared with the pressure of the hot gases which enter the rotor chambers. The high pressure cool gases expand through the nozzles, pass through an outlet port and through a duct to the heating chamber. Then when the rotor chamber nozzle outlet is exposed to a hot gas outlet port in the rotor housing, the discharge velocity of the hot gases held therein is also very high. Thus by reaction to the discharge of both cool and hot gases, the compressor-expander rotor itself is caused to do work.

The present engine may further optionally include movable sections in the side walls of the rotor housing which can be used to adjust the sizes and mean positions of the inlet and outlet ports, as illustrated for the ports connected with the heating chamber and the compressed cool gas chamber. By this means the efficiency of the engine can be controlled, when the speed or the rate of acceleration or deceleration of the compressor-expander rotor is changed. Further, the present engine optionally includes a plurality of reentry paths through the rotor housing and a plurality of recharging-reaction stages through the compressor-expander rotor which enable the engine to recharge the rotor chambers repeatedly, thereby efficiently utilizing the energy of the high pressure hot gases in stages to produce useful work.

3,811,797

FUEL PUMPS FOR USE IN CONDUCTION WITH GAS TURBINE ENGINES

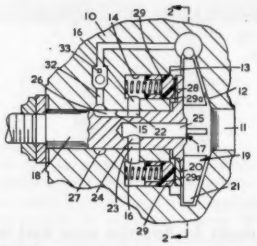
Geoffrey Arthur Lewis, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 31, 1972, Ser. No. 276,440

Claims priority, application Great Britain, July 29, 1971, 35607/71

Int. Cl. F04b *23/08*

U.S. Cl. 417—199 A **3 Claims**



A fuel pump in which there is provided a centrifugal impeller operative at high speed and a reciprocating piston pump operative at low speeds. The pump becomes inoperative when

a speed is reached such that the spring loading of the pistons is overcome by the pressure generated by the centrifugal impeller. The outlets of the two pumps are connected together via non-return valves.

3,811,798

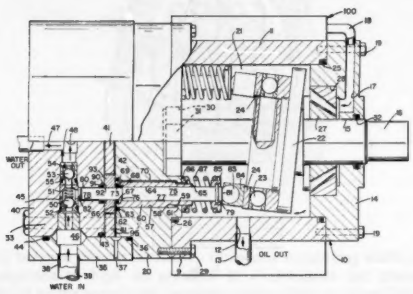
PISTON PUMP WITH SELF-LUBRICATING PISTONS

John C. Bickford, Novato, Calif., assignor to Hydraulic Systems, Inc., San Rafael, Calif.

Filed July 19, 1972, Ser. No. 273,154

Int. Cl. F04b *1/12*; F01b *31/10*

U.S. Cl. 417—269 **21 Claims**



A pump having pistons that actuate a pumping device by suction and compression and having novel means for sealing the fluid being pumped from the lubricating fluid and for ensuring lubrication between the pistons and their cylinders. The reciprocation of the pistons is made to pump the lubricating fluid between them and the cylinder and to return the fluid to an internal lubricant reservoir. A swash plate acts also as a circulating pump for sending the lubricating fluid through an external cooling reservoir.

3,811,799

LIQUID FUEL PUMPING APPARATUS

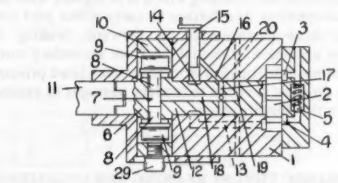
Gordon Frederick William Jackson, New Malden, England, assignor to C.A.V. Limited, Birmingham, England

Filed Oct. 12, 1972, Ser. No. 297,066

Claims priority, application Great Britain, Oct. 15, 1971, 48019/71

Int. Cl. F04b *1/06*

U.S. Cl. 417—221 **3 Claims**



A fuel pumping apparatus includes a member adjustable to vary the timing of injection of fuel to the engine and which is operated by a fluid pressure operable device which comprises a first piston of cup-shaped form and having its open end subjected to a speed dependent pressure which moves it against a first spring and the apparatus also includes a second piston located within the first piston and connected to said member. The second piston is also subjected to said speed dependant pressure but is capable of limited movement relative to the first piston. Means is provided to control the pressure in the space between the two pistons in accordance with the setting of the throttle member of the apparatus.

3,811,800

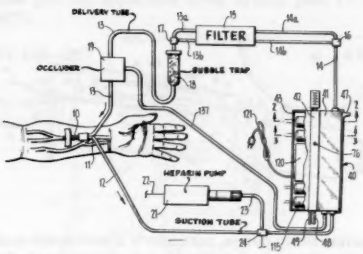
BLOOD PUMP

Karl Shill, 38171 Ashford Way, Fremont, Calif.

Filed July 12, 1972, Ser. No. 271,011

Int. Cl. F04b *43/10, 45/06*; A61m *5/00*

U.S. Cl. 417—317 **5 Claims**



This invention relates to a pump for an "artificial kidney machine", or hemodialysis device; and primarily is designed for the pumping of blood for purification in such a system using the recently announced procedure of "single needle" dialysis, whereby a single needle is temporarily inserted into a vein or artery of a patient through which blood is withdrawn from the vein for purification and returned to the patient through the same needle. Such a dialysis system requires, in addition to the filter and pump, a device commonly called an "occluder" by means of which purified blood from the filter is prevented from flowing to the needle during the suction stroke of the pump when blood is withdrawn from the patient and is open to flow during the pumping stroke.

3,811,801

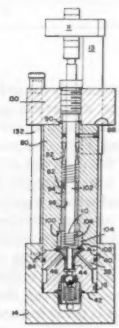
MULTI-PLUNGER RECIPROCATING PUMP

Frederick W. Buse, Allentown, and Warner E. Sensinger, Jr., Emmaus, both of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 30, 1972, Ser. No. 257,588

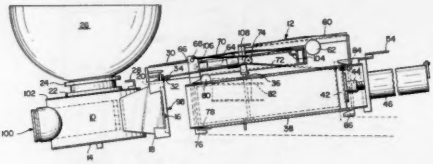
Int. Cl. F04b *21/02*

U.S. Cl. 417—454 **6 Claims**



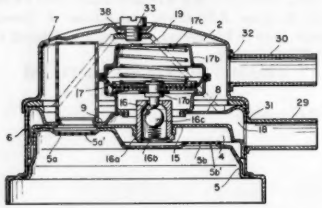
A multi-plunger reciprocating pump having a cylinder head with internal manifolding and valving arrangement that permits removal of valves as units from selected pumps, valve bodies with bias porting, and studs in constant tension. A solenoid actuated rod may be added to unload the compression chambers by inhibiting the inlet or suction valve from seating.

3,811,802
SLURRY PUMP CLEANOUT MECHANISM
Charles A. Semple, Midland, Tex., assignor to Engineering Concrete Placer, Inc., Midland, Mich.
Filed Dec. 6, 1972, Ser. No. 312,764
Int. Cl. F04b 15/02, 21/00, 39/12
U.S. Cl. 417—454 7 Claims



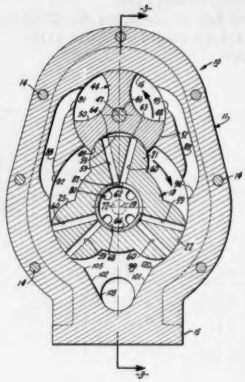
Concrete slurry pumps, particularly a mechanism enabling separation of the valve housing from the pumping cylinders, to enable a washing cleanout of the cylinders and pumping pistons therein.

3,811,803
DIAPHRAGM PUMP
Gunther Frohberg, Neuss/Rhine, Germany, assignor to A. Pierburg Auto-und Luftfahrtgeraete KG, Neuss/Rhein, Germany
Division of Ser. No. 864,337, Oct. 7, 1969, abandoned. This application Jan. 6, 1972, Ser. No. 215,767
Claims priority, application Germany, Oct. 23, 1968, 1804532
Int. Cl. F04b 21/04
U.S. Cl. 417—458 3 Claims



A diaphragm pump, particularly for use as a fuel pump in an internal combustion engine, comprises upper and lower housing parts separated by a diaphragm which is clamped between them. The upper housing part comprises an intermediate housing and a top cover fixed on top of it. The intermediate housing has a cross wall which extends across the interior of the upper housing part and which, together with a valve plate within the intermediate housing, divides the upper housing part into three separate chambers, a suction chamber to which the pump inlet is connected, a working chamber, and a pressure chamber to which the pump outlet is connected. The working chamber is situated between the valve plate and the diaphragm. A sunken port is press formed or drawn integrally from the cross wall in an eccentric position, the lower lip of this sunken port being sealed to the valve plate around a corresponding aperture in the valve plate. In this way a passageway is formed communicating the chamber above the cross wall, preferably the suction chamber, with the working cyamber. The seal at the lower lip of the sunken port is formed either by a sealing ring or by the lip being directly fixed to the valve plate.

3,811,804
ROTARY ENGINE WITH INTERENGAGING ROTATING MEMBERS AND REVERSING VALVE
Larry L. Roth, 39 Palm Ave., Millbrae, Calif., and Joseph Liston, 900 Robinson Ave., West Lafayette, Ind.
Filed Dec. 29, 1972, Ser. No. 319,841
Int. Cl. F01c 1/08; F04c 17/04; F01c 21/16
U.S. Cl. 418—32 2 Claims

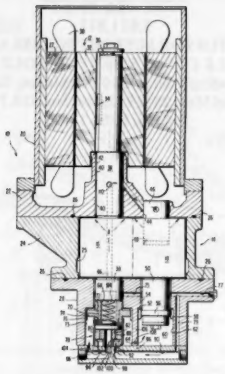


A Rankine cycle rotary engine and gas flow control valve mechanism used therewith. A housing of the engine forms a pair of cylindrical cavities in which primary and secondary rotors are mounted for rotation about spaced, parallel axes. Three outwardly projecting lobes on the primary rotor intermesh with three concaval recesses on the secondary rotor, and a timing gear train is provided to turn the secondary rotor in opposite and equal angular rotation with the primary rotor. Gas under pressure is directed through a distributor chamber to a flow control valve sleeve mounted for axial sliding movement concentrically within the primary rotor. Pairs of radially extending distributor passageways are formed in each of the lobes to direct gas from the valve into successive expansion chambers formed between the intermeshing lobes and recesses. The valve sleeve is formed with a pair of axially spaced apart flow control ports. The control ports are bounded by pairs of admission and cutoff edges which diverge apart in opposite axial directions. Means is provided to axially position the valve sleeve for throttling by varying the angular sector of the control port opening which is in register with the distributor passageways, and further to carry either port into register with these passageways for forward, braking or reverse engine operation. Residual gas from secondary rotor recesses which have disengaged from their associated primary rotor lobes is directed through secondary passages to expand and act against the primary rotor.

3,811,805
HYDRODYNAMIC THRUST BEARING ARRANGEMENT FOR ROTARY SCREW COMPRESSOR
Harold W. Moody, Jr., and Donald D. Schaefer, both of Farmington, Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.
Filed May 16, 1972, Ser. No. 253,752
Int. Cl. F01c 1/16, 21/04
U.S. Cl. 418—88 5 Claims

The female drive screw of an axial screw compressor directly drives an oil pump at the end of the screw supporting shaft, remote from the motor, which delivers high pressure oil to hydrodynamic thrust bearings between the ends of the male and female screws and the end plate at the discharge side of the compressor. The female screw is hollow and forms an oil

passage with both screws incorporating inclined radial passages to direct pressurized oil to their discharge end faces.



Oil balance pistons carried by the screw supporting shafts are subjected to high oil pressure to overbalance the created thrust on the screws due to compression of the working fluid.

3,811,806

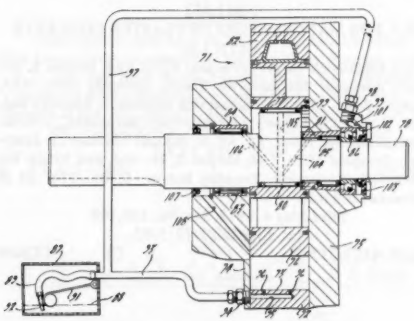
LUBRICATING SYSTEM FOR ROTARY MACHINE

Robert W. King, Sidney, Ohio, assignor to Copeland Refrigeration Corporation, Sidney, Ohio

Filed Feb. 1, 1972, Ser. No. 222,602

Int. Cl. F01c *21/00*

U.S. Cl. 418—100 **5 Claims**



A lubricating system primarily for a rotary piston machine such as a rotating internal combustion engine. The lubricating system includes a conduit that leads from the lubricant sump to a chamber of the mechanism that cyclically changes in volume. When the volume is increasing, the pressure differential acting on the conduit forces oil or other lubricant from the sump into the chamber to lubricate the rotating members. In one embodiment, the pressure differential caused by the changes in volume of the chamber is also used to deliver lubricant to bearings of the mechanism. In each embodiment a capillary device in the form of a porous member meters the flow of lubricant.

3,811,807

ROTARY COMPRESSING, DISPLACING OR EXPANDING MACHINE

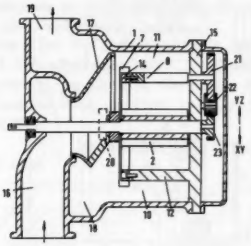
Donald Wilfred Tryhorn, Slough, England, assignor to Sir W. G. Armstrong Whitworth & Company (Engineers) Limited, Slough, Buckinghamshire, England

Filed June 15, 1972, Ser. No. 263,095

Claims priority, application Great Britain, June 17, 1971, 28424/71

Int. Cl. F01c *1/00*

U.S. Cl. 418—227 **4 Claims**



A rotary fluid compressing displacing or expanding machine of the type in which lobes on a rotor rotate within a casing relative to blades which are rotatably mounted on the casing so as in sequence to form a barrier to the passage of fluid and by their rotation permit passing of the lobes to cause a continuous delivery of fluid in front of the lobes and intake of fluid behind the lobes. With the object of achieving a lower than usual noise level and an increased fluid displacement for a given casing diameter, an improved machine is characterized in that the tips of the blades sequentially form a sealing clearance with an inner surface of the casing which is concentric with the rotary axis and further in that the blade thickness to width ratio is in the range of $0.4/N$ to $0.9/N$ where N is the number of blades.

3,811,808

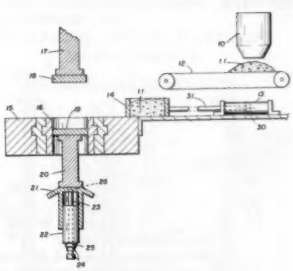
WEIGHED CHARGE SYSTEM FOR A BRICK PRESS

Richard O. Platt, Bethel Park, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 22, 1971, Ser. No. 117,587

Int. Cl. B29c *3/06*

U.S. Cl. 425—167 **4 Claims**



A system to deliver a weighed charge to the mold box of a brick press so that the material is uniformly distributed in the mold is disclosed. Specifically, a weighed charge is conveyed to the mold by conventional means, but is distributed in the mold by the coordinated synchronous movement of both the lower press pad's downward motion and the reciprocating action of the charger during the charging sequence.

3,811,809

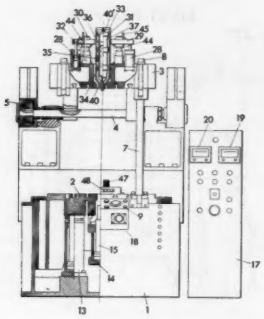
DIE PRESS AND ADJUSTING MECHANISM THEREFOR

Takeo Hitosugi, No. 1-20-7, Taihei-cho, Tokyo, Japan

Continuation-in-part of Ser. No. 100,695, Dec. 22, 1970. This application Mar. 16, 1973, Ser. No. 342,200

Int. Cl. B28b *17/00*

U.S. Cl. 425—173 3 Claims



A die press such as an injection molding press. The press has a lower table and an upper bolster for respectively carrying lower and upper die structures which will define a cavity to receive the mold material. An injection assembly is situated at the upper bolster for injecting mold material into this cavity. The bolster is capable of being swung between an operative position over the table and an inspection position where the bolster has been swung from its operative position through 180° and is inverted so that the upper die structure can readily be inspected. A mounting structure mounts the injection assembly on the bolster in such a way that it is possible for the injection assembly to swing with the bolster while still remaining operative at all times.

3,811,810

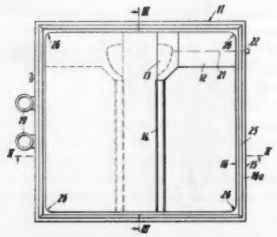
DEEP-DRAWING MOULD FOR SHAPING THERMOPLASTIC PANELS

Hans Gunter Moller, Oldinburger Landstr. 50, 287 Delmenhorst, Germany

Continuation of Ser. No. 94,714, Dec. 3, 1970, abandoned. This application Mar. 5, 1973, Ser. No. 337,993

Int. Cl. B29c *17/02*

U.S. Cl. 425—185 7 Claims



A deep-drawing mould for shaping bathroom forms from the thermoplastic panels. The mould comprises a rigid, box-shaped master having a steel outer wall and a spaced, aluminum inner wall. The inner wall is ported in the corners so that a vacuum may be drawn to pull an overlying thermoplastic panel down into the mould, and temperature regularing means are also provided between the walls. Detachable mould parts, such as a wash basin form, may be inserted in the master mould and provided with separate vacuum drawing means.

3,811,811

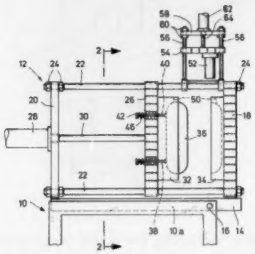
APPARATUS FOR SUPPORTING RELATIVELY MOVABLE COMPLEMENTAL MOLD PARTS

Gunter Horl, Esslinger Str., 7310 Plochingen, Germany

Filed Mar. 28, 1972, Ser. No. 238,791

Int. Cl. B28b *17/00*

U.S. Cl. 425—192 4 Claims



For ensuring accessibility to any desired location of a mold used in injection or cast molding, the support structure carrying the complemental and relatively movable mold halves includes a grate to which a mold half is directly affixed. The multitude of openings in the grate permits simultaneous accessibility to several desired locations at the associated mold half.

3,811,812

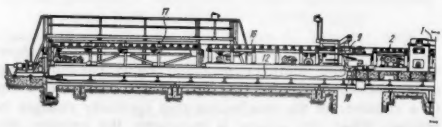
MILL FOR MANUFACTURE OF PLASTER CONCRETE ARTICLES

Abram Isaakovich Birger, Prospekt Mira, 184, korpus 2, kv. 167; Alexandr Mikhailovich Fiskin, Prospekt Mira, 184, korpus 2, kv. 211; Ivan Sergeevich Samsonov, Zuezdny bulvar, 5, kv. 23; Anatoly Alexandrovich Savushkin, 2 Novo-Ostankinskaya ulitsa, 14, kv. 5; Nikolai Nikolaevich Zemtsov, Prospekt Mira, 184, korpus 2, kv. 164, and Vitaly Arkadievich Borisevich, Zvezdny bulvar, 5, kv. 174, all of Moscow, U.S.S.R.

Filed May 4, 1972, Ser. No. 250,169

Int. Cl. B28b *3/12, 5/02*

U.S. Cl. 425—217 1 Claim



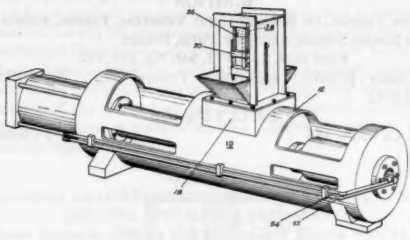
A mill is disclosed which is provided with a device for feeding plaster concrete wastes back to a concrete mixer, said device comprising means for receiving and crushing the wastes, as well as means for conveying said wastes back to the concrete mixer.

3,811,813

BRIQUETTING PRESS

Russell William Taccone, Erie, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 25, 1972, Ser. No. 283,881
Int. Cl. B29c 3/04
U.S. Cl. 425—252 5 Claims



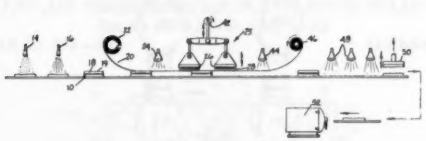
The press includes a stationary box for receiving metal chips. The chips are precompressed in the box by a tamping cylinder. A fixed anvil and a ram lie in horizontal registry on opposite sides of the chip box. A die encompasses the avil and is carried by a movable cylinder which allows for "floating" of the die. The movable die holding cylinder cooperates with a piston fixed on an anvil support rod to respectively extend the die toward the chip box to define a die cavity with the end face of the anvil and retract the die away from the chip box and anvil end face. The ram moves from a retracted position on one side of the chip box through the box to transfer the chips from the container into the die cavity and compress the same against the anvil end face adjacent the other side of the chip box. The die holding cylinder is neutralized during the final portion of the squeeze stroke permitting the die to float, thus equalizing the pressure applied to the opposite ends of the briquette. After the ram is retracted, the die is retracted thereby stripping the briquette from the die and permitting it to fall onto a rollout chute.

3,811,814

VIBRATION IMPACT TEXTURING APPARATUS

Paul Lewis Earle, Martinsville; Andrew Musz, Raritan, both of N.J., and Jan Josef Maria Vandervelden, Mol, Belgium, assignors to Johns-Manville Corporation, New York, N.Y.

Division of Ser. No. 160,857, July 8, 1971, Pat. No. 3,767,746. This application Apr. 20, 1973, Ser. No. 353,040
Int. Cl. B29c 17/00
U.S. Cl. 425—385 5 Claims



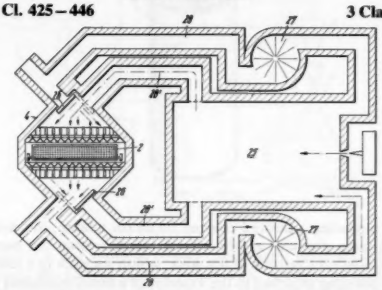
An improved process and apparatus for vibration impact texturing of asbestos cement products and an apparatus therefor. Prior to placing a deformable material on a mold carrying a negative impression of a pattern desired to be imparted to the deformable material, the mold is coated with a liquid which is capable of being absorbed by the deformable material to displace air from recessed areas of the mold. The deformable material while on the mold is subject to the action of rapidly moving members to transfer the pattern to the material. At least some of the rapidly moving members which first impact against the deformable material have sharp pointed ends and the remaining members have blunt ends. After impact by the reciprocating members, the material on the mold is heated to preset the deformable material. The presently preferred deformable material is asbestos-cement in sheet form.

3,811,815

APPARATUS FOR MANUFACTURING OF BODIES OF BULKING CLAY

Erich Sundermann, and Johanna Viedt, both of Broitzem, Germany, assignors to Waldemar Dolle, Braunschweig, Germany, by said Sundermann

Division of Ser. No. 20,916, March 19, 1970, Pat. No. 3,745,201. This application May 5, 1971, Ser. No. 140,479
Claims priority, application Germany, Mar. 21, 1969, 1914372; Germany, Sept. 10, 1969, 1945810; Germany, Sept. 10, 1969, 1945811
Int. Cl. B29b 3/00
U.S. Cl. 425—446 3 Claims



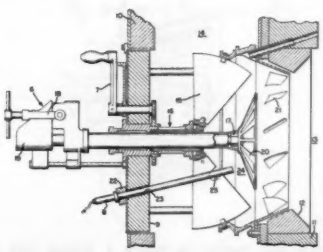
An apparatus for manufacturing of bodies of swelling clay or equivalent material which comprises a burner adapted for heating of gases and a heaped body to be heated by the gases. A passage chamber is arranged for guiding of the gases and for receiving the heaped body. A rollable, molding box is provided which has massive side walls and a sieve-like perforated bottom wall, as well as a massive, perforated cover, selectively usable in the passage chamber or applicable outside of the passage chamber, and the heaped body is received in the rollable molding box and comprises granules of clay.

3,811,816

ACOUSTIC FLAME DETECTORS FOR STEAM GENERATORS

Nelson Whitman, Lincoln, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,429
Int. Cl. F23m 5/16
U.S. Cl. 431—75 4 Claims



In a steam generator having a plurality of burners fed by a common windbox and heating a common firebox, a directional electroacoustical sensor for each burner is

disposed in the passage between the windbox and the firebox. The sensor is responsive to a relatively narrow band width of sound and distinguishes between a flame and a no-flame condition in the individual burner.

3,811,817
LAMP FOR PRODUCING COLORED FLAME

John A. Mansnerus, Northbrook, and Ted A. Dombrowski, West Chicago, both of Ill., assignors to The Bell Company, Inc., Chicago, Ill.

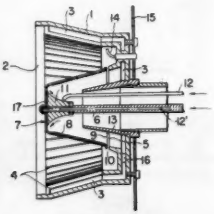
Filed Feb. 20, 1973, Ser. No. 333,716
Int. Cl. F23q 2/44
U.S. Cl. 431—126 **6 Claims**

To provide a desired colored flame for a lamp, our method and lamp provides a safe way of incorporating the metallic chlorides on a portion of the wick, which we pack in a removable covering attached to the exterior of a metal container prior to use. The container has fuel and a wick opening which is covered before use by a closure. In use the closure is removed from the container, and the covering is removed from the wick. An untreated portion of the wick is inserted through the wick opening to the fuel in the bottom of the container. The fuel is then ignited and burns to heat the metallic salts on the portion of the wick extending beyond the wick opening to produce desired colored flame.

3,811,818
LIQUID FUEL BURNER

Kingo Miyahara, Tokyo, Japan, assignor to Kabushiki Kaisha Dowa, Tokyo, Japan

Filed Mar. 29, 1973, Ser. No. 346,127
Claims priority, application Japan, July 16, 1972, 47-71123; July 16, 1972, 47-71124
Int. Cl. F23d 11/04
U.S. Cl. 431—168 **4 Claims**

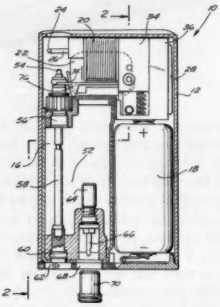


A liquid fuel burner in which a hollow fuel gasifying member and a fuel diffusing member are mounted on a rotary shaft within the burner body for coaxial rotation and air under pressure is directed toward these members for atomizing liquid fuel. A narrow atomized fuel blowing gap is defined between the open end of the gasifying member and a central open space of a gas chamber so that the mixture of atomized fuel and air can be first ignited to heat the gasifying member to a high temperature for promoting later gasification of liquid fuel for continuous combustion.

3,811,819
MODULAR GAS LIGHTER WITH ELECTRONIC IGNITION

Pierre Toiseux, Ol Bellegarde sur Valserine, France, assignor to Ronson Societe Anonyme, Paris, France

Filed Sept. 25, 1972, Ser. No. 291,923
Claims priority, application France, Sept. 20, 1971, 71.33692
Int. Cl. F23q 2/16
U.S. Cl. 431—255 **2 Claims**

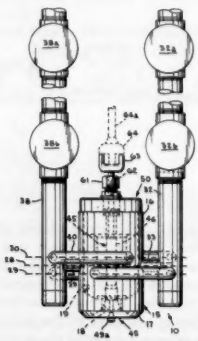


A gas lighter actuated by an electronic ignition system wherein the electronic ignition system as well as the fuel system and battery are provided in the form of modules disposed within the lighter housing. An actuating slide in the electronic circuit module is operably connected to the gas burner valve so that movement of the slide actuates the electronic ignition system and simultaneously operates the burner valve to produce a spark which ignites a flow of gas from the burner valve.

3,811,820
WELL TEST BURNER

Joseph G. Theriot, 1205 Canal St., Morgan City, La.

Filed Nov. 1, 1973, Ser. No. 412,010
Int. Cl. F23d 11/40
U.S. Cl. 431—354 **7 Claims**



A well tester burner for oil wells includes a hollow body closed at one end and having an opening at the other to pro-

vide a mixing chamber therebetween. A plurality of openings extend through the body into the chamber and are arranged in an opposing manner so that oil from the well tested may be discharged through a plurality of openings and air discharged into other openings the oil and air openings being arranged in an opposed manner so that the oil and air impinge against each other and form a mist in the mixing chamber prior to discharge through the opening.

A lance extends longitudinally in the body and is movable relative thereto for controlling the volume of oil and air mist discharged through the opening from the body. The lance includes surface means that cooperate with the opening and surface on the end of the body adjacent to the opening for further misting of the oil and air for better combustion, so that a smokeless flame is created meeting present government and ecology requirements.

3,811,821

POWDER IMAGE FIXING DEVICE FOR XEROGRAPHIC COPYING APPARATUS AND METHOD

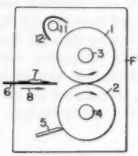
Kenzo Ariyama; Shigeru Muramatsu, and Ryoichi Namiki, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,130

Claims priority, application Japan, Dec. 3, 1971, 46-98054; Dec. 3, 1971, 46-98055

Int. Cl. F27b *9/28*

U.S. Cl. 432—8 **14 Claims**



A device comprising a heating, and fixing roller and a pressing roller, the heating and fixing roller having a peripheral surface to which powder of a powder image formed on a recording sheet by a xerographic method is hard to adhere and the pressing roller having a peripheral surface to which the powder readily adheres. The recording sheet is passed between the two rollers so that the powder image on the recording sheet may be fixed.

3,811,822

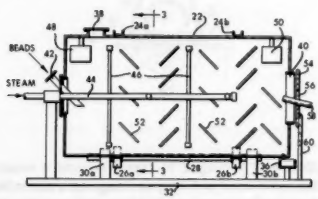
PROCESS FOR THE EXPANSION OF EXPANDABLE RESIN BEADS

Edward L. Cherenson, Needham Heights, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Division of Ser. No. 175,548, Aug. 27, 1971, Pat. No. 3,751,218. This application Apr. 30, 1973, Ser. No. 355,416

Int. Cl. F27b *15/00*; **F26g** *11/02*

U.S. Cl. 432—13 **11 Claims**



An apparatus for the production of low-density expandable resin beads, which apparatus comprises: a vessel to contain the beads; an inlet to introduce beads to be expanded into the interior of the vessel; an outlet to discharge from the vessel the beads after expansion to the desired density; means to rotate the vessel and to move the beads in a path from the inlet to the outlet of the vessel; and means to heat the beads while in the vessel from one state to another desired expansion state. Baffles are spaced apart from the interior wall of the vessel, and the baffles which are in the path of the beads are adapted to control the residence time of the beads as they move from the inlet to the outlet and of the vessel, and to maintain the beads as they move from the inlet to the outlet in a substantially uniform condition of expansion.

3,811,823

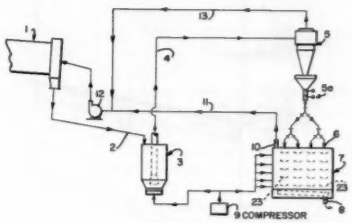
APPARATUS FOR COOLING PULVERULENT MATERIAL

Jay Warshawsky, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed Apr. 12, 1973, Ser. No. 350,544

Int. Cl. F27b *7/38*

U.S. Cl. 432—80 **14 Claims**



Apparatus for cooling heated pulverulent material which has been discharged from a rotary kiln, furnace, or reactor and also for recovering the product heat for use as a preheated source of air for combustion in the kiln or for drying in another process. The apparatus comprises several levels of fluidized beds which are arranged one above another and spaced from the walls of the outer casing, so that pulverulent material flows by means of displacement overflow from the upper to the lower bed while cooling air passes upward, through, and around the fluidized bed of material. The cooling air is then removed from the casing and discharged directly as preheated air into a rotary kiln, furnace, or reactor.

3,811,824

COOLER TUBES FOR ROTARY KILN

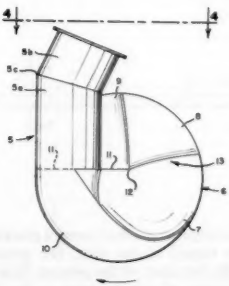
Sven E. Theil, Copenhagen, Denmark, assignor to F. L. Smith & Co., Cresskill, N.J.

Filed Sept. 13, 1972, Ser. No. 288,491

Claims priority, application Great Britain, Sept. 20, 1971, 43765/71

Int. Cl. F27b *7/20*

U.S. Cl. 432—80 **6 Claims**



An improved cooler tube construction for rotary kilns is disclosed which includes a concavo-convex internal surface

located at the inlet end of each cooler tube. This concavo-convex surface acts to prevent back-spill and to advance material through the cooler tube.

3,811,825

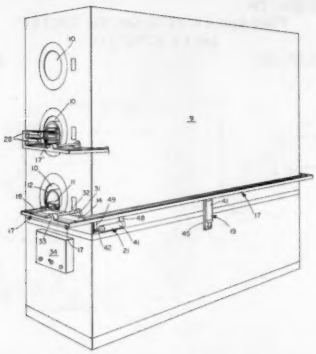
SEMICONDUCTOR WAFER TRANSPORT DEVICE

Hans Dieter Friedrich Konrad Enderlein, Konstanz, Germany, assignor to John B. Sowell, Ardmore, Pa.

Filed Nov. 3, 1972, Ser. No. 303,653

Int. Cl. F27b 9/14

U.S. Cl. 432—122 **14 Claims**



A transport system for conveying semiconductor wafers through a process tube of a diffusion furnace having both fixed wafer support means and movable wafer transport means inside the process tube, the movable wafer transport means being moved inside the process tube by movable frame means mounted external of the process tube to lift the semiconductor wafers and advance them a predetermined distance along the fixed wafer support means.

3,811,826

DIFFUSION FURNACE PROCESS TUBE

Hans Dieter Friedrich Konrad Enderlein, Konstanz, Germany, assignor to John B. Sowell, Ardmore, Pa.

Filed Nov. 3, 1972, Ser. No. 303,652

Int. Cl. F27b 5/04, 11/08

U.S. Cl. 432—200 **8 Claims**

An improved process tube having a plurality of chambers on the process tunnel of the tube, two process gas chambers straddling the hot-zone of the process tube provide introduction and exhaust of process gases to the hot-zone, and two chambers straddling the process gas chambers provide gas curtains to restrict the process gases to the process tunnel intermediate the two process gas chambers.

3,811,827

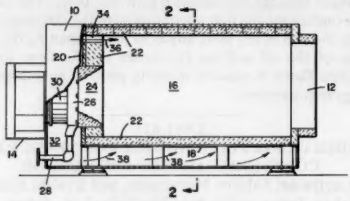
DIRECT-FIRED HEATING AND COMBUSTION CHAMBER

Ralph Richard Vosper, San Jose, Calif., assignor to Coen Company, Burlingame, Calif.

Filed Feb. 5, 1973, Ser. No. 329,940

Int. Cl. F27b 3/02

U.S. Cl. 432—221 **12 Claims**



A direct-fired cylindrical chamber having a horizontal floor and a refractory lining is disclosed. Relatively cool air or other gaseous material enters the chamber through ports adjacent the upper portion of the chamber and longitudinal slots of variable width provided between the floor and the sides of the chamber. The air entering through the ports acts to cool the upper portion of the refractory lining, while air passing through the longitudinal slots acts to cool the side portions of the refractory lining. Hence, the air which is to be heated is effectively used to cool the refractory lining to reduce wear thereof.

3,811,828

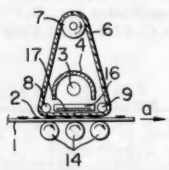
PROCESS AND DEVICE FOR HEATING AND FIXING AN IMAGE UPON A RECORDING MEDIUM

Wasaburo Ohta, Yokohama; Kazuhiko Kasuya, Kawasaki; Sakae Fujimoto, Tokyo, and Masayuki Yamauchi, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 85,184, Oct. 29, 1970, abandoned. This application Aug. 8, 1972, Ser. No. 278,832

Int. Cl. F27b 9/28

U.S. Cl. 432—227 **3 Claims**



An endless belt arranged to travel around a source of infrared radiation is used in fixing an image on a recording medium as the recording medium is advanced past the belt. The belt, driven in the direction of advance of the recording medium by a drive roller spaced away from the infrared radiation source, passes between the infrared radiation source and the recording medium; the belt prevents contact of the medium with the source while permitting radiation from the source to heat and fix the image on the advancing recording medium.

3,811,829

ISOTHERMAL BOAT CONTAINER

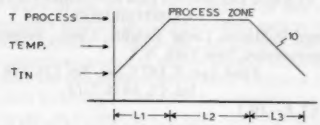
Richard A. Wesson, Phoenix, Ariz., and Sandford Platter, Bolton, Mass., assignors to Semi, Inc., Phoenix, Ariz. and Robert L. Jarratt, Trustee in bankruptcy for Semiconductor Electronic Memories, Inc.

Filed Oct. 26, 1971, Ser. No. 192,052

Int. Cl. F27b *9/00*

U.S. Cl. 432—253 **5 Claims**

In heat treating semiconductor circuits formed on wafers, the wafers are usually loaded into a boat and the boat is pushed into a diffusion furnace. This invention provides a container into which a boat is loaded and then pushed to the center of the furnace. The construction of the container is made such that the temperature gradient undergone by the semiconductor material is maintained below the value at which improper thermal stress is applied. Also, the temperature of the wafers in all locations of the boat is maintained substantially the same. As a result crystal damage is avoided.



3,811,830
STABLE OIL-IN-WATER EMULSION HAIR DYE COMPOSITION

Richard DeMarco, Cedar Heights, Conn., assignor to Clairol Incorporated, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,426
Int. Cl. A61k 7/12
U.S. Cl. 8—10.1 **13 Claims**

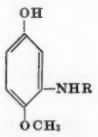
A hair dye composition in the form of an oil-in-water emulsion in which the dye is dissolved or finely dispersed in the oil phase. The composition contains a coupling agent (e.g., water soluble alkylene glycols or alkylene glycol ether alcohols; long-chain fatty acid soaps; or long-chain fatty compound polyoxyalkyl or polyhydroxyalkyl derivatives) which imparts stability to the emulsion. The composition may contain a propellant and be dispensed from an aerosol container.

3,811,831
DYEING HAIR WITH DIAMINE AND AMINOPHENOL OXIDATION DYES AND DIAMINE OR AMINOPHENOL COUPLERS

Andree Bugaut, 7, rue des Abondances, Boulogne-sur-Seine, and Francoise Estradier, 4, rue Nobel, Paris, both of France

Continuation of Ser. No. 841,137, July 11, 1969, abandoned. This application Mar. 14, 1972, Ser. No. 234,672
Claims priority, application Luxembourg, July 15, 1968, 56491
Int. Cl. D06p 1/32
U.S. Cl. 8—11 **7 Claims**

A composition for dyeing keratinic fibers, especially hair, containing an aqueous solution of an oxidation dye which can be either one having a phenyl nucleus substituted with two amino groups in para position relative to each other or one having a phenyl nucleus substituted with an amino group and a hydroxyl group in ortho or para position relative to each other, and as a coupler therefor a compound having the formula



wherein R can be hydrogen, $-CH_2CH_2OH$, $-COCH_3$ or $-CH_2-NH_2$. The oxidation dye to coupler ratio ranges between 10:1 and 1:4 and the composition has an alkaline pH. It is applied to the hair in the presence of an oxidizing agent for a period of about 5–30 minutes at a temperature of about 15–40 °C, after which the hair can be washed and dried.

3,811,832
TANNING IMPROVEMENTS

Philip Stanley Briggs, Leeds, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 751,032, Aug. 8, 1968, abandoned. This application Apr. 8, 1971, Ser. No. 132,580
Claims priority, application Great Britain, Aug. 19, 1967, 38315/67
Int. Cl. C14c 3/18, 3/02, 3/04, 3/06
U.S. Cl. 8—94.25 **29 Claims**

A process for tanning hides or skins comprises first treating the hides or skins with a basic salt of a multivalent metal; and then treating the hides or skins with a reaction medium containing a water-soluble salt of a dibasic organic acid, the water-soluble salt being one that forms an alkaline solution in water, and being present in an amount sufficient to maintain an alkaline pH in the reaction medium.

3,811,833
STABILIZED HYDROGEN PEROXIDE COMPOSITIONS CONTAINING AMMONIUM IONS, AND PROCESS FOR BLEACHING THEREWITH

Neil J. Stalter, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

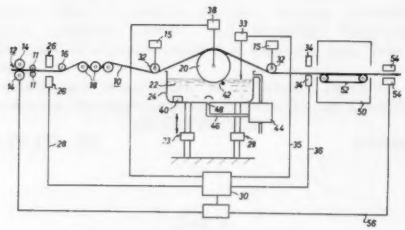
Filed June 30, 1972, Ser. No. 268,051
Int. Cl. D06l 3/02
U.S. Cl. 8—111 **9 Claims**

A stable aqueous bleaching composition comprising: (1) concentrated, acidic hydrogen peroxide stabilized with a stannate salt; (2) an ammonium salt; (3) a stabilizing amount of an organic acid, preferably an alkylidene diphosphonic acid or salt; (4) optionally, other additives. Upon making the bleaching composition alkaline, the NH_4^+ ion is converted to ammonium hydroxide, which promotes the bleaching activity of hydrogen peroxide. There is also provided a process for bleaching with the bleaching composition.

3,811,834
METHOD AND APPARATUS FOR FINISHING CELLULOSE-CONTAINING TEXTILE MATERIALS AND TEXTILE MATERIALS THUS PRODUCED

Martin Schwemmer, Urdorf; Hans Bors, Fallanden, and Albert Goetz, Dietikon, all of Switzerland, assignors to Triatex International AG. Fur Textile Forschung und Entwicklung, Zurich, Switzerland

Filed Mar. 19, 1971, Ser. No. 126,723
Claims priority, application Switzerland, Mar. 26, 1970, 4659/70
Int. Cl. D06m 13/52, 15/70; D06c 29/00
U.S. Cl. 8—116 R **16 Claims**



A method of finishing cellulose-containing textile materials by applying a bath containing at least one finishing agent to the textile material. Application of the amount of bath which is applied being controlled such that the total percentual amount of applied bath in addition to the moisture content of the textile material, based upon the dry weight of such material, at most amounts to $[W^2/150]+40)$, wherein W represents in percent the water retention capacity of the textile material determined in accordance with test method ASTM–D2402–6 5T.

The equipment for practising the invention to produce these finished textile products or materials embodies at least one applicator device which preferably is constituted by at least one

applicator or kiss roll for applying the finishing bath, there being further provided control means for regulating the rotational speed of such kiss roll to precisely regulate the amount of applied bath.

3,811,835

TREATMENT OF WOOL

Raymond Charles Gallup, Attleboro, and Richard Edward Riley, New Bedford, both of Mass., assignors to Precision Processes (Textiles) Limited, Derby, England

Filed Feb. 8, 1971, Ser. No. 113,697

Claims priority, application Great Britain, Feb. 23, 1970, 8639/70

Int. Cl. D06m *3/10, 15/36, 15/60*

U.S. Cl. 8—128 A **3 Claims**

Wool is rendered shrink-resistant by:

a. a preliminary mild oxidative shrink-resist treatment, preferably using a chlorine-containing agent, and

b. treatment with a cationic polyelectrolyte, preferably a polyvinyl imidazoline, and with a polymer, e.g., a polyethylene, emulsion, so as to exhaust polymer on to the wool fibres.

The treated wool can be dried below 100°C and does not need to be cured.

3,811,836

CONTINUOUS DYEING OF SYNTHETIC TEXTILE FIBRES WITH A BASIC CHARACTER

Jean Marie Louis Jules d'Albignac, and Jean-Francois Gamaury, both of Creil, France, assignors to Societe Civile Soltex, Paris, France

Continuation of Ser. No. 847,000, July 29, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 210,269

Claims priority, application France, Aug. 14, 1968, 68.162965

Int. Cl. D06p *5/04*

U.S. Cl. 8—173 **2 Claims**

Dyebath comprising a solution of anionic dyestuff prossessing at least one free acid group in an organic liquid, the boiling point of the organic liquid being from 120°C. to 300°C. and a process for the continuous dyeing of synthetic textile fibres possessing basic functions in which the fibres are passed for from some seconds to some minutes at a temperature from 90°C. to 160°C. through a solution comprising an organic liquid having a boiling point from 120°C. to 300°C. and an anionic dyestuff in the form of the free acid.

3,811,837

METHOD OF DETERMINING ACID AND WATER IN OIL

John E. Hoffman, St. Louis, Mo., assignor to Sporlan Valve Company, St. Louis, Mo.

Filed Dec. 30, 1970, Ser. No. 102,928

Int. Cl. G01n *31/22*

U.S. Cl. 23—230 HC **1 Claim**

A method of measuring water in used oils, comprising the steps of placing a measured volume of a test solution into a first container, the first container being of a known volume when filled to overflow; placing a measured volume of test solution into a second container; pouring the measured volume of test solution from the first container into the second container; filling the first container to overflow with the oil being tested; pouring the measured volume of oil from the first container into the second container, the second container being of a volume large enough to accommodate the measured volumes of test solutions and oil, shaking the second container, introducing an additional measured volume of oil being tested into the second container so that the resultant solution separates into two phases to indicate the percentage by volume of water in the oil. The test solution in one container is a neutralizer solution including an alkali such as sodium hydroxide or potassium hydroxide, an alcohol such as ethyl alcohol, isopropyl alcohol or methyl alcohol and a small amount of water. The test solution in the other container is an indicator solution including an aromatic hydrocarbon such as benzene or toluene, an alcohol such as ethyl alcohol, isopropyl alcohol or methyl alcohol, and an indicator such as phenol red, phenolphthalein, cresol red, bromthymol blue, congo red, chlorophenol red or orange I. The percentage of aromatic hydrocarbon by volume in the indicator solution is about two percent (2 percent) to about ninety-eight percent (98 percent) of the combined volume of aromatic hydrocarbon, alcohol and indicator.

3,811,838

METHOD AND APPARATUS FOR MEASURING RADIOACTIVITY OF ORGANIC SUBSTANCE

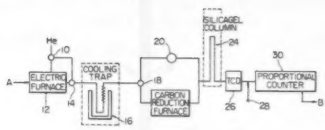
Tomoo Saito, Sagamihara; Naotake Morikawa, Tokyo, and Kazuo Wanatable, Yokohama, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 8, 1972, Ser. No. 304,728

Claims priority, application Japan, Nov. 10, 1971, 46-089119; June 10, 1972, 47-057927; June 10, 1972, 47-057928

Int. Cl. G01n *31/08, 31/12*

U.S. Cl. 23—230 PC **7 Claims**



A radioactive labelled compound is measured quantitively of its mass by a thermal conductivity detector (TCD) and then passed through a proportional counter to take radioactive measurement. As occasion demands, the compound is decomposed into CO_2 and H_2O and then H_2O is trapped which is then reduced in a furnace by using carbon for preparing H_2, on which quantitive measurement is taken by the TCD and then on which radioactive measurement is taken by the proportional counter.

3,811,839

APPARATUS FOR THE DETERMINATION OF FLAMMABILITY AND SMOKE DENSITY OF POLYMERS

Joseph Di Pietro, and Heinrich E. Stepniczka, both of Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

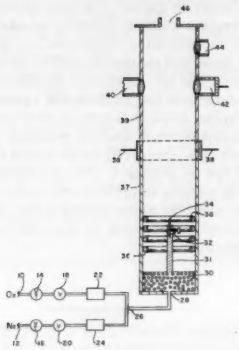
Filed Apr. 28, 1972, Ser. No. 251,546

Int. Cl. G01n *21/12, 21/26, 31/12*

U.S. Cl. 23—253 PC **5 Claims**

There is disclosed a method and an apparatus for determining the flammability and smoke density of polymeric materials. The apparatus comprises a first device to determine the

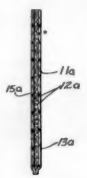
flammability of the polymer under consideration by the oxygen index method and a second device connected to said first device to determine simultaneously, if desired, the smoke density of the same polymer.



3,811,840
TEST DEVICE FOR DETECTING LOW CONCENTRATIONS OF SUBSTANCES IN FLUIDS

Robert Bauer, Bristol; Richard Gordon Rosenfield, South Bend, and Chauncey Orvis Rupe, Elkhart, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 1, 1969, Ser. No. 811,935
Int. Cl. G01n *31/14, 33/00, 33/16*
U.S. Cl. 23—253 TP **8 Claims**



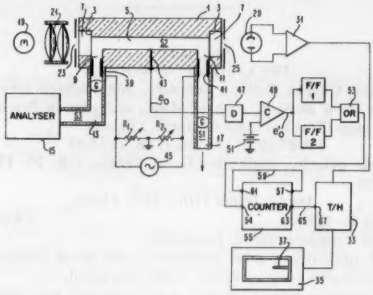
Test device for detecting low concentrations of substances in test fluids comprising an absorbent wick having a substantially flat surface portion enclosed in a fluid impervious sheath having an aperture of predetermined limited area formed therein, the aperture being contiguous to and exposing a predetermined limited area of the flat surface portion of the wick, which portion is incorporated with a reagent specifically reactable with the substance being detected. In use the device is immersed into the test fluid so that the aperture is submerged and the device, allowed to remain therein while the test fluid contacts the reagent area adjacent to the aperture and migrates into the remainder of the wick. The reagent is immobilized with respect to the liquid. The sheath adjacent to the wick is opaque.

3,811,841
GATING FLOW CELL STRUCTURE FOR CONTINUOUS-FLOW ANALYSIS SYSTEMS

Aaron Kassel, Tarrytown, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,149
Int. Cl. G01n *27/10, 33/16*
U.S. Cl. 23—253 R **11 Claims**

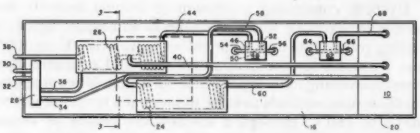
A flow cell structure having a sight passageway for analyzing a series of liquid samples separated by a segmentizing medium, e.g., air or other inert gas, includes at least three electrodes in electrical contact with the segmented sample stream passing therealong. The electrodes are disposed with respect to the sight passageway and in a ratio system, so as to indicate the presence of segmentizing medium in the sight passageway and deactivate the recorder.



3,811,842
TEMPERATURE-CONTROLLED FLUID MANIFOLD FOR A FLUID SYSTEM OF AN AUTOMATED SAMPLE ANALYZER

Herman G. Diebler, North Haledon; Steven Andrew Gyori, Allendale, and William J. C. McCandless, Ringwood, all of N.J., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 7, 1972, Ser. No. 260,551
Int. Cl. G01n *33/16*
U.S. Cl. 23—259 **10 Claims**



Temperature-controlled fluid manifold for a fluid system of an automated sample analyzer of the type for analyzing a series of liquid samples flowing seriatum to quantitative analysis for a constituent of interest. The basic elements of the temperature-controlled manifold may be permanently combined with a wide variety of other components to meet the requirements of many different chemistries to provide many different temperature-controlled manifolds each suited for analysis of a different constituent of a sample such as blood for example. In each particular manifold, the sample may be treated as by combination and mixing with any appropriate reagent or reagents under temperature-controlled conditions for subsequent analysis as in a colorimeter for example. The manifold may be significantly smaller in size and less costly than conventional manifolds. The aforementioned basic manifold elements comprise a thermally conductive plate or block heated by conduction from a temperature-controlled source of heat, which plate has an outer, exposed surface of substantial area,

and an appropriate number of appropriately configured fluid passageway portions, such as helical mixing or helical time-delay paths, encapsulated in a solid material characterized by a heat storage capacity and which material is supported in an appropriate location on the last-mentioned surface for thermal transfer by conduction to the material from the plate. The manifold includes a cover effectively tending to stagnate the ambient atmosphere around such encapsulated fluid passageway portions.

3,811,843

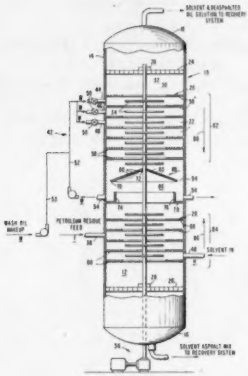
SOLVENT DEASPHALTING

Oliver Morfit, Green Village, and John G. Ditman, Newark, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Feb. 22, 1973, Ser. No. 334,783

Int. Cl. B01d *11/04*

U.S. Cl. 23—270.5 **13 Claims**



The invention deals with an apparatus for treating asphaltic feedstock in which a hydrocarbon solvent is introduced into a compartmentalized contacting tower below the feedstock, and a wash oil solvent is introduced above the feedstock. The contacting tower is formed with an enlarged central compartment in which there is located a conically shaped annulus for interrupting and recycling the flow of wash oil.

3,811,844

ROTATING DISC CONTACTOR DRAW-OFF SYSTEM

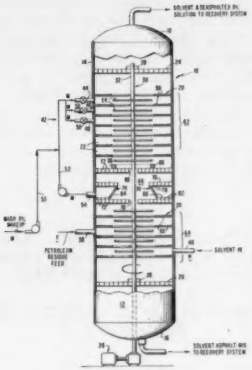
Joseph C. Dunmyer, Jr., and Rino L. Godino, both of Livingston, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Feb. 22, 1973, Ser. No. 334,784

Int. Cl. B01d *11/04*

U.S. Cl. 23—270.5 **5 Claims**

The invention deals with an apparatus for treating asphaltic feed stock in which a hydrocarbon solvent is introduced into a compartmentalized contacting tower below the feed stock, and a wash oil solvent is introduced above the feed stock. The contacting tower is formed with an enlarged central compartment in which there is provided an annularly shaped accumulator basin for reducing the flow of the dispersed phase and



recycling the dispersed phase back to the upper portion of the tower.

3,811,845

VEHICLE EXHAUST CONTROL EQUIPMENT

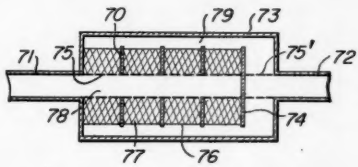
Harutoki Nakamura, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 19, 1971, Ser. No. 163,939

Claims priority, application Japan, July 30, 1970, 45-67146; July 30, 1970, 45-67147; May 12, 1971, 46-32076

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 F **1 Claim**



A casing is divided into a plurality of small parallel catalyst chambers into which are packed mesh-like catalysts whose carriers are fabrics woven from glass fibers.

3,811,846

ALUMINUM ALLOY ELECTRICAL CONDUCTOR

Roger J. Schoerner, and Enrique C. Chia, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 94,193, Dec. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 54,563, July 13, 1970, abandoned. This application June 5, 1972, Ser. No. 259,722

Int. Cl. B21c *1/00*; **C22f** *1/04*

U.S. Cl. 29—193 **32 Claims**

Aluminum alloy electrical conductors are produced from aluminum base alloys containing from about 0.20 to about 1.60 weight percent cobalt, from about 0.30 to about 1.30

weight percent iron, up to about 0.40 weight percent magnesium, up to about 0.40 weight percent copper, from about 99.50 to about 97.00 weight percent aluminum and up to about 0.45 weight percent each of additional alloying elements, the total weight percent of additional alloying elements not exceeding about 0.70 percent; the total weight percent of magnesium and copper not exceeding about 0.40 percent and the total weight percent of additional alloying elements not exceeding about 0.40 percent when the total weight percent of cobalt and iron exceeds about 1,80 percent. The alloy conductors have an electrical conductivity of at least 57 percent, based on the International Annealed Copper Standard (IACS), and improved properties of increased thermal stability, tensile strength, percent ultimate elongation, ductility, fatigue resistance and yield strength as compared to conventional aluminum alloys of similar electrical properties.

3,811,847

LIQUID HYDROCARBON FUELS

Harry J. Andress, Jr., Pitman, and Henry Ashjian, East Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,316
Int. Cl. C10l *1/18*
U.S. Cl. 44—63 **10 Claims**

Liquid hydrocarbon fuels containing, in an amount sufficient to impart good detergent properties, an acetal produced by the reaction of a partial ester of an alcohol and an aldehyde, in which the ester has a least 18 carbon atoms.

3,811,848

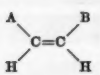
ANTISTATIC ADDITIVE COMPOSITIONS

Daniel D. Johnson, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 30, 1972, Ser. No. 268,045
Int. Cl. C10l *1/24*
U.S. Cl. 44—62 **10 Claims**

Antistatic compositions comprising

1. olefin-sulfur dioxide copolymer consisting essentially of units derived from sulfur dioxide, C_6-1-alkene, and optionally an olefin having the formula



wherein A is a group having the formula $-(C_xH_{2x})-COOH$ wherein x is from 0 to about 17, and B is hydrogen or carboxyl, and

2. a quaternary ammonium compound.

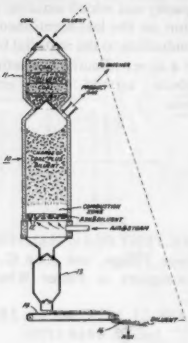
3,811,849

REFRACTORY BODIES AS FIXED BED COAL GASIFICATION DILUENTS

Donald E. Woodmansee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,454
Int. Cl. C10j *3/16*
U.S. Cl. 48—202 **4 Claims**

The swelling of coal in fixed bed coal gasification is accommodated by the addition of a diluent to the charge of coal in approximately 1:1 volume ratio (or higher) in the form of strong, open-structured bodies. The structures described herein as diluent bodies are hollow refractory cylinders capable of retaining structural integrity throughout the profile of



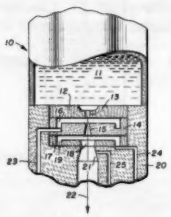
temperature exposure and having cavities large enough to accomodate the swelling of coal and add porosity to the bed.

3,811,850

HIGH SPEED PRODUCTION OF FILAMENTS FROM LOW VISCOSITY MELTS

Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1972, Ser. No. 319,133
Int. Cl. C03b *37/02*; **D01d** *11/00*
U.S. Cl. 65—1 **10 Claims**



Improvements in method and apparatus are provided for the fabrication of fibers and filaments from extremely low viscosity melts by continuous extrusion. Realizable production rates are increased up to three-fold over existing capability. This is made possible by an improved orifice assembly which permits very high attenuation of the filamentary jet without an attending disturbance of the jet stream. In practice, the filamentary jet is brought into a zone of pressurized inert gas upon emergence from the extrusion orifice. The jet is then passed with the inert gas in concurrent flow through a supersonic nozzle and into a first zone occupied by a film-forming, gaseous atmosphere followed by passage through a converging orifice and into a second zone of film-forming gas.

3,811,851

METHOD OF MAKING FOAMED GLASS PRODUCTS WITH EXCRETA AND GLASS BATCH

John D. MacKenzie, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed July 5, 1972, Ser. No. 268,999
Int. Cl. C03b *19/08*
U.S. Cl. 65—22 **13 Claims**

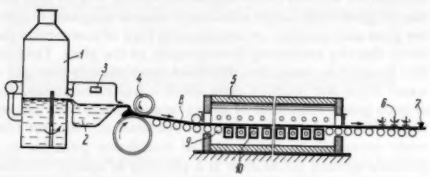
An improved method of making glass products is provided which comprises mixing particulate glass with a selected treat-

ing agent comprising heat treated excreta to form a unique glass mix. The glass may be of any type, such as used-container glass which has a preselected approximate concentration range of foreign inclusions and an average reflectance of about 5 percent to about 95 percent, the reflectance of the single colored glass being arbitrarily considered as 0 percent whereas that of the white glass being 100 percent. The mix is heated to a temperature and pressure above the annealing and softening point of the glass but below its melting point and within a range sufficient to activate the treating agent to either foam or fill the glass. In the latter case, increased pressure is applied to form the glass into a hard pressed product, such as tile, of unique composition. In the former case, foamed glass of unique composition is produced. The used-container glass utilized in one embodiment includes a plurality of particles of various colors which imparts a distinctive appearance to the finished product. Pressed products may also have oxide pigments embedded in the surfaces thereof.

3,811,852
METHOD OF PRODUCING ROLLED POROUS GLASSCERAMIC MATERIAL

Konstantin Timofeevich Bondarev, Nizhnaya Pervomaiskaya ulitsa, 33 kv. 176; Nikolai Mikheevich Pavlushkin, ulitsa Gotvalda, 14, kv. 44; Isai Davidovich Tykachinsky, ulitsa Fadeeva, 6, kv. 140, all of Moscow; Viktor Stepanovich Kozlovsky, ulitsa Teatralnaya, 6a, kv. 22, Dolgoprudny Moskovskoi oblasti; Valentin Feoktistovich Krylov, ulitsa Kropotkina, 24/1, kv. 14, and Svetlana Ivanovna Rud, ulitsa Pavla Korchagina, 10, kv. 6, both of Moscow, all of U.S.S.R.

Filed Aug. 22, 1972, Ser. No. 282,841
Int. Cl. C03b *19/08*
U.S. Cl. 65—22 **1 Claim**



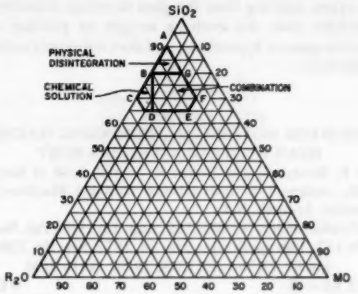
A method of founding glass melt accompanied by its simultaneous frothing at a temperature of from 1,500° to 1,530°C, preparing the glass melt at a viscosity of from 25 to 60 poises and crystallizing the molded glass ribbon in a two-step process at respective temperatures of 650°–700°C and 1,100°–1,150°C and respective crystallization times of 0.3–0.5 hr and 1.0–1.5 hr, with the temperature rising between the two steps of the process with a 1.3°C/min gradient.

3,811,853
DEGRADABLE GLASS SUITABLE FOR CONTAINERS

Roger F. Bartholomew, Painted Post; Donald E. Campbell, Corning; Harold F. Dates, Corning; Stanley S. Lewek, Corning; Francis J. Marusak, Corning; Joseph E. Pierson, Painted Post; Stanley D. Stookey, Corning, and Bruce A. Swinehart, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 1, 1972, Ser. No. 249,289
Int. Cl. C03c *19/00*; **C03b** *33/00*; **B65d** *23/00*
U.S. Cl. 65—23 **56 Claims**

The present invention relates to the production of glasses included within particularly-defined ranges of the sodium silicate and/or potassium silicate composition system which will



spontaneously degrade or disintegrate in the ambient atmosphere into relatively non-polluting residual material.

3,811,854
METHOD OF MAKING FLOAT GLASS

George A. Pecoraro, 439 Dakota Dr., Lower Durrell, Pa.

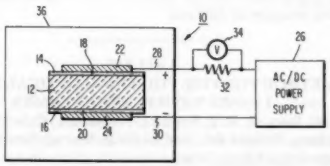
Continuation-in-part of Ser. No. 138,822, April 29, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,514
Int. Cl. C03b *5/16*
U.S. Cl. 65—27 **2 Claims**

In making high-quality flat glass by the float process, a product substantially free of tridymite-frost stone defects is obtained by mechanically dislodging, during brief and infrequent time intervals, substantially all of the readily dislodgeable particles of tridymite adhering to the silica roof of the refining zone of the melting furnace. Preferably, the removal is done by blowing hot gases against the roof.

3,811,855
METHOD OF TREATING A GLASS BODY TO PROVIDE AN ION-DEPLETED REGION THEREIN

David Emil Carlson, Yardley, Pa.; Kenneth Warren Hang, East Windsor, and George Fairbank Stockdale, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,974
Int. Cl. C03c *23/00*
U.S. Cl. 65—30 **9 Claims**



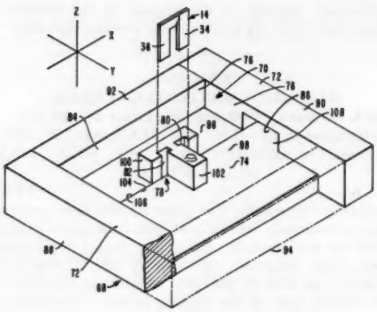
A method that modifies the composition of a region adjacent the surface of an ion conducting glass body comprises applying an electric field, at an elevated temperature, between opposite surfaces of the glass body to remove substantially all monovalent and most divalent ions from the region. A desired

ion-depleted region occurs adjacent the anode-contacted surface of the glass body if the anode is a blocking electrode of relatively non-reactive material with the components of the glass body. A preferred blocking anode is a porous layer of colloidal particles of graphite. A particulate graphite anode allows oxygen evolving from the glass to escape therethrough, or combine with the evolving oxygen to produce easily removable gaseous byproducts, and does not supply cations to the glass body.

3,811,856
METHOD FOR MOLDING AN AIR BEARING MAGNETIC HEAD WITH A GLASS SLIDER BODY

James F. Ruszczyk, and Duane R. Secrist, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 850,765, Aug. 18, 1969, Pat. No. 3,670,112. This application Jan. 24, 1972, Ser. No. 220,516
Int. Cl. C03b *9/00*; **C03c** *29/00*; **G11b** *5/00*
U.S. Cl. 65—48 **4 Claims**



An air bearing slider assembly includes a U-shaped magnetic head and a monolithie glass body which is formed in the glassy state so as to chemically as well as physically bond the head thereto, a nonmagnetic gap in the base of the head being disposed at an air bearing surface of the glass body to facilitate noncontact magnetic recording. The slider assembly is fabricated using a mold having a central cavity which defines the desired configuration of the glass body and which positions the magnetic head at a selected location relative to the glass body to be formed. The mold cavity is filled with a fluid glass composition which solidifies as a monolithic body in bonded relation to the head.

3,811,857
METHOD FOR FIRE POLISHING OPTICAL GLASS LENSES WITH PLASMA FLAMES

Emil W. Deeg, R. R. 2, Box 221, Woodstock, Colo.; Carl G. Silverberg, Willard Rd., and Leslie B. Martel, New Boston Rd., both of Sturbridge, Mass.

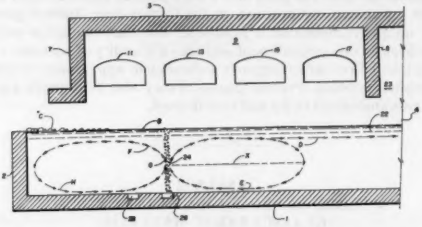
Continuation-in-part of Ser. No. 201,596, Nov. 17, 1971, abandoned. This application June 15, 1973, Ser. No. 370,248
Int. Cl. C03b *29/04*
U.S. Cl. 65—65 R **11 Claims**

Flame polished lenses for spectacles and instruments are provided. Surfaces exhibit profiles of a quality equivalent or superior to mechanically polished lenses by use of a high frequency plasma torch. The torch flame is characterized by extremely high temperature, short wavelengths of maximum emission energy combined with low gas flow rate.

3,811,858
METHOD AND APPARATUS FOR MIXING MOLTEN GLASS BY BUBBLING

Fred M. Ernsberger, Pittsburgh, and Thomas J. Nier, Cheswick, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 9, 1972, Ser. No. 261,205
Int. Cl. C03b *5/18*
U.S. Cl. 65—135 **24 Claims**



Improvements are disclosed in a process wherein molten glass is subjected to the agitation of small bubbles generated by electrolysis of molten glass. This gas generation usually is conducted at the anode and the effect of cathodic reactions is advantageously held to a minimum by conducting the electrolysis of glass which contains ferric iron or the like higher valent ion and limiting the degree of electrolysis of glass contacting the cathode so that reduction reactions at the cathode are largely confined to reduction of such higher valent ion to a lower valent state without electrodepositing metal. The oxygen bubbles so generated can be effectively caused to agitate the molten glass and generate or enhance the flow of convection currents, thereby improving homogeneity of the glass. They can also be used to sweep out dissolved gases such as nitrogen or water vapor and produce glass which is free or essentially free of such gases. Pluralities of gas generating electrodes are provided. These electrodes may be operated at different electrode potentials to obtain special circulation patterns or to produce upward circulation at a plurality of spaced locations in the molten glass. Their operation also may be alternated to minimize localized polarization or other effects at the surface of the electrode or to prevent voltage between electrodes from rising excessively.

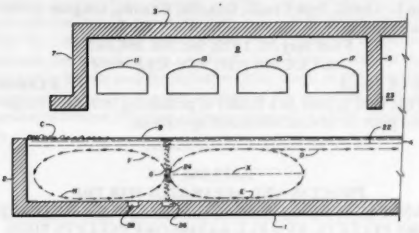
3,811,859
PROCESS AND APPARATUS FOR ELECTROLYTICALLY GENERATING STIRRING BUBBLES IN A GLASS MELT

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 9, 1972, Ser. No. 261,482
Int. Cl. C03b *5/18*
U.S. Cl. 65—135 **21 Claims**

Improvements are disclosed in a process wherein molten glass is subjected to the agitation of small bubbles generated by electrolysis of molten glass. This gas generation usually is conducted at the anode and the effect of cathodic reactions is advantageously held to a minimum by conducting the electrolysis of glass which contains ferric iron or the like higher valent ion and limiting the degree of electrolysis of glass contacting the cathode so that reduction reactions at the cathode are largely confined to reduction of such higher valent ion to a lower valent state without electrodepositing metal. The oxygen bubbles so generated can be effectively caused to agitate the molten glass and generate or enhance the flow of convection currents, thereby improving homogeneity of the glass. They can also be used to sweep out dissolved gases such as nitrogen or

water vapor and produce glass which is free or essentially free of such gases. The gas bubbles generated as above described



are produced by electrolysis of the glass between anode and cathode which are separated by a solid electrolyte such as beta alumina.

3,811,860

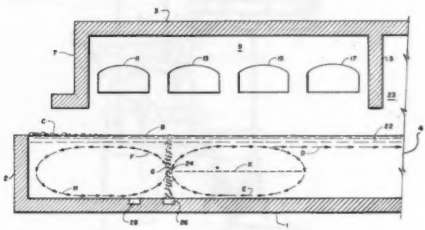
PROCESSING OF STIRRING MOLTEN GLASS WITH BUBBLES FROM ELECTROLYSIS

Thomas J. Nier, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 9, 1972, Ser. No. 261,498

Int. Cl. C03b *5/18*

U.S. Cl. 65—135 **35 Claims**



Molten glass is subjected to the agitation of small bubbles generated by electrolysis of molten glass. This gas generation usually is conducted at the anode and the effect of cathodic reactions is advantageously held to a minimum by conducting the electrolysis of glass which contains ferric iron or the like higher valent ion and limiting the degree of electrolysis of glass contacting the cathode so that reduction reactions at the cathode are largely confined to reduction of such higher valent ion to a lower valent state without electrodepositing metal. The oxygen bubbles so generated can be effectively caused to agitate the molten glass and generate or enhance the flow of convection currents, thereby improving homogeneity of the glass. They can also be used to sweep out dissolved gases such as nitrogen or water vapor and produce glass which is free or essentially free of such gases.

3,811,861

APPARATUS FOR HOMOGENIZATION OF MOLTEN GLASS AND ADDITIVES

German Artigas Gimenez, Aviles, Spain, assignor to Saint-Gobain Industries, Neuilly-sur-Siene, France

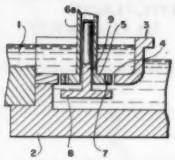
Division of Ser. No. 22,254, May 13, 1970, Pat. No. 3,725,025. This application Jan. 27, 1972, Ser. No. 221,264

Claims priority, application France, Mar. 25, 1969, 69.08758

Int. Cl. C03b *5/18*

U.S. Cl. 65—179 **7 Claims**

Method and apparatus for the homogenization of molten glass and additives thereto, flowing in the feeder channel of a glassmelting furnace. The glass flow is broken up into a multiplicity of small vertical streams or filaments which are then re-combined by and between two closely-spaced horizontal superposed surfaces. The upper surface may be a disk rotating



about a vertical axis and comprising a multiplicity of apertures through which the molten glass flows. The lower surface may be fixed, or a disk rotatable as a unit with the upper disk, or independently but coaxially in the opposite direction, or in the same direction but at speed different from the upper disk.

3,811,862

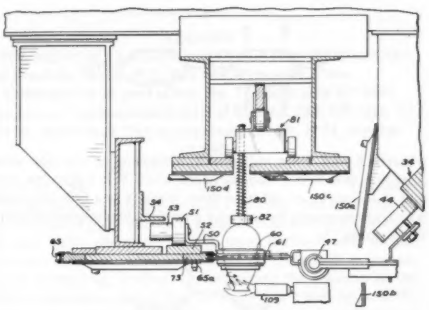
GLASS HEAT TREAT MACHINERY

Louis P. Yakubek, and George R. Obenshain, both of Perrysburg, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 82,987, Oct. 22, 1970. This application Sept. 27, 1972, Ser. No. 292,839

Int. Cl. C03b *24/04, 25/00*

U.S. Cl. 65—280 **3 Claims**



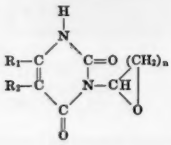
A glass making machine and particularly a heat treat machine wherein open-ended hollow glass articles are supported on carriages moved in an endless path by a conveyor. Each carriage pivotally supports a plurality of heads which, in turn, rotatably support the hollow glass articles. The conveyor moves the carriages and in turn the articles through a plurality of work zones of heat treatment including heating, quenching and cooling zones. As the articles are moved through a work zone, the supports on the heads are rotated to rotate the articles. The work zone includes burners for applying flames to the lower open end of the articles while rotating. A hold down device engages the opposite upper end of each of the articles while in said path, and holds the articles in the support carriage. Next the articles travel in a second path through cooling means.

3,811,863
NOVEL TETRAHYDROPYRIMIDINES

Daniel Bertin; Jacques Perronnet, and Andre Teche, all of Paris, France, assignors to Roussel-UCLAF, Paris, France

Division of Ser. No. 126,865, March 22, 1971, Pat. No. 3,732,228. This application Oct. 19, 1972, Ser. No. 298,859
Claims priority, application France, Mar. 26, 1970, 70.10906; Jan. 28, 1971, 71.02829
Int. Cl. A01n 9/22
U.S. Cl. 71—92 13 Claims

Novel 1, 2, 3, 4-tetrahydropyrimidine-2,4-diones of the formula



I

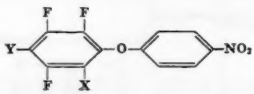
wherein R_1 is selected from the group consisting of lower alkyl of one to seven carbon atoms and phenyl, R_2 is selected from the group consisting of hydrogen, chlorine, bromine and lower alkyl of one to seven carbon atoms and *n* is 3 or 4 which have herbicidal activity and their preparation and intermediates therefor.

3,811,864
DIPHENYL ETHER HERBICIDAL COMPOSITIONS

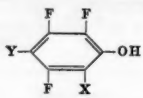
Makoto Nagatomi; Takayuki Isogawa; Nobuo Onodera, all of Tokyo, and Nobuo Ishikawa, Yokohama, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,624
Claims priority, application Japan, Dec. 28, 1970, 45-11937
Int. Cl. A01n 9/24
U.S. Cl. 71—124 9 Claims

Novel diphenyl ether derivatives having the formula,

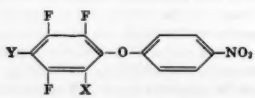


wherein X and Y are individually a fluorine or chlorine atom, provided that X is a fluorine atom when Y is a fluorine atom and is a fluorine or chlorine atom when Y is a chlorine atom, which are prepared by reacting a pentahalogenophenol having the formula,



wherein X and Y are defined above, with a p-nitrohalogenobenzene at an elevated temperature in the presence of a deacidifying agent.

A new herbicidal composition comprising a herbicidal amount of at least one compound represented by the formula,



wherein X and Y are as defined above.

3,811,865
METHOD OF FORMING IRON ORE PELLETS USING A FINELY DIVIDED TREE BARK BINDER

John L. Ladell, Port Credit, Ontario, Canada, assignor to Ontario Research Foundation, Ontario, Canada

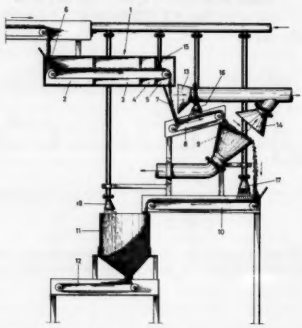
Filed May 30, 1972, Ser. No. 258,043
Int. Cl. C21b 1/26, 1/08; C22b 1/14
U.S. Cl. 75—3 8 Claims

Tree bark is used as a binder in pelletizing iron ore concentrates prior to furnace reduction operations.

3,811,866
PROCESS AND APPARATUS FOR THE MANUFACTURING OF ROASTED, BAKED OR SINTERED ORE PELLETS, AS WELL AS THE ORE PELLETS THUS OBTAINED

Anthonie van Latenstein, Santpoort, Netherlands, assignor to Koninklyke Nederland sche Hoogovens En staalfabriken N.V., Ijmuiden, Netherlands

Filed Aug. 30, 1971, Ser. No. 176,037
Claims priority, application Netherlands, Aug. 31, 1970, 7012876
Int. Cl. F27d 3/00
U.S. Cl. 75—5 6 Claims



In manufacturing roasted, baked, or sintered ore pellets, from green pellets formed from a mixture substantially consisting of ore powder, by a process of the type which comprises forming a stream of the pellets and (a) heat treating the pellets to effect the roasting, baking or sintering thereof, (b) then cooling the pellets, (c) then screening them and (d) thereafter transporting them, the process is improved (e) by conducting the cooling in step (b) to reduce the pellets to a temperature of not over 60°C, and (f) by moistening the screened pellets following step (c) to a water content of 2 to 5 percent by weight, whereby liberation of dust from the pellets during their transportation in step (d) is inhibited. The cooling in step (b) is effected by air cooling to 100°–400°C followed by spraying the pellets with water up to about 6 percent of their weight. Further spraying before and after screening is preferred, and the apparatus aspect of the invention is also disclosed.

3,811,867
PROCESS FOR THE RECOVERY OF TANTALUM AND NIOBIUM AND OTHER METALS FROM TIN SLAG

John J. Scott, 3052 Saint Andrew Ave., Niagara Falls, Ontario, Canada

Filed Oct. 16, 1972, Ser. No. 297,595
Int. Cl. C22b 51/00
U.S. Cl. 75—24 3 Claims

Aluminum oxide or calcium oxide is added to tin slag, which contains a relatively large silica content along with a source of

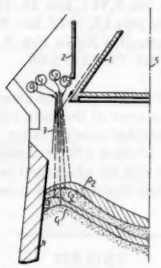
carbon, and the mixture is fused. The added aluminum oxide or calcium oxide combines with the silicon oxide and other metallic compositions present to form a slag phase of a new composition which has a melting point 100°–400°C higher than the original slag composition. In the fusion the carbon reduces the tantalum and niobium and other oxides to the respective metals and the higher melting range of the new slag composition results in super heating of the metal alloy which facilitates a more effective ultimate separation of the metal alloy.

3,811,868

METHOD FOR CHARGING MATERIALS INTO BLAST FURNACE

Shin-Ichi Inaba; Ken-Ichi Okimoto, both of Kobe City; Setsuo Tamura, Nishinomiya, and Tashiyuki Uenaka, Kobe City, all of Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe, Japan

Filed Sept. 7, 1972, Ser. No. 286,886
Claims priority, application Japan, Mar. 6, 1972, 47-22896
Int. Cl. C21b *5/00*
U.S. Cl. 75—42 **2 Claims**



The charging positions of iron bearing materials and a solid reducing agent to be charged into a blast furnace are adjusted by using a variable charging means such as an armor plate so that iron bearing materials and solid reducing materials alternately accumulate in the vertical direction of the furnace in layers which have coaxial circular vertices. The ore-coke ratio in the charged and accumulated beds of material in the furnace is substantially uniform in the radial direction of the furnace, resulting in a uniform upward gas flow rate at any section in the furnace. Thus, stabilized furnace operation and maximum furnace performance are achieved by improved gas utilization and the smooth entry of the falling charge material to the furnace.

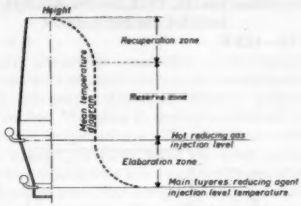
3,811,869

PROCESS FOR THE REDUCTION OF IRON ORES

Nicolas Gerassimo Ponghis, Liege, and Arthur Gerard Poos, Embourg, both of Belgium, assignors to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed Mar. 31, 1971, Ser. No. 129,930
Claims priority, application Belgium, Mar. 31, 1970, 748274; Mar. 31, 1970, 748275; Apr. 7, 1970, 748623; Apr. 10, 1970, 748835; June 30, 1970, 752792; July 10, 1970, 753344; Sept. 9, 1970, 755953; Oct. 14, 1970, 757519
Int. Cl. C21b *5/06*
U.S. Cl. 75—42 **16 Claims**

Iron ore is reduced in a blast furnace. Hot reducing gas is injected into the furnace at the level of the reserve zone; the gas can be reformed gas produced by partial combustion with oxygen of hydrocarbons preheated to about 650°C without pyrolysis. A reducing agent is injected into the furnace at approximately the level of the tuyeres; the agent can be coal-oil slurry, fuel oil, natural gas, or reformed gas.



3,811,870

BASIC OXYGEN PROCESS USING A SODIUM HYDROXIDE REACTION PRODUCT FLUX

Barrie H. Bieler; David C. Morgan, and Kenneth W. Guebert, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 10, 1971, Ser. No. 206,882
Int. Cl. C21c *7/00*
U.S. Cl. 75—52 **19 Claims**

In the manufacture of steel wherein sodium hydroxide is employed as an additive in such manufacture, the improvement of using a reaction product of sodium hydroxide and a calcium oxide source material as the source of sodium hydroxide. A particular instance is the use of this reaction product as an additive to a calcium oxide based flux.

3,811,871

PROCESS FOR CLASS IV B METALS ORE REDUCTION

Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn.

Continuation-in-part of Ser. No. 741,865, July 2, 1968, abandoned, Continuation-in-part of Ser. No. 783,730, Dec. 13, 1968, abandoned. This application Feb. 19, 1971, Ser. No. 117,098
Int. Cl. C22b *33/00, 61/02*
U.S. Cl. 75—84 **16 Claims**

The oxides of IV B are reduced to their metallic state by first introducing the ore into a liquid containing phosphoric acid, zinc oxide and water. The solution is mixed and calcium carbonate is added. After removal of particles held in suspension by decanting, settling, and returning the solution to the original container, the mixture is brought to a boil. Most of the volatiles are removed by boiling and sodium bicarbonate is added to the mixture, along with water. After the reaction has gone to completion, the solution is again decanted and the remaining material is leached and rinsed, following which it is smelted to the base metal.

3,811,872

CORROSION RESISTANT HIGH STRENGTH ALLOY

Edwin Snape, Monsey, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,217
Int. Cl. C22c *39/00, 19/00*
U.S. Cl. 75—122 **14 Claims**

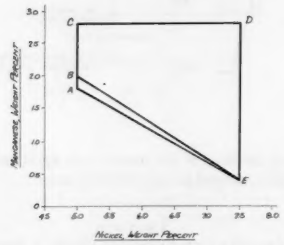
A high strength corrosion resistant steel containing correlated amounts of iron, chromium, molybdenum, cobalt, nickel, carbon and other constituents such as aluminum and titanium. The alloys resist pitting and crevice corrosion as well as general corrosion and are capable of offering tensile strengths well above 150,000 psi.

3,811,873

HIGH STRENGTH LOW COST STEEL FOR USE AT CRYOGENIC TEMPERATURES

John Joseph deBarbadillo, II, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,021
Int. Cl. C22c *39/36, 39/54*
U.S. Cl. 75—123 K 2 Claims



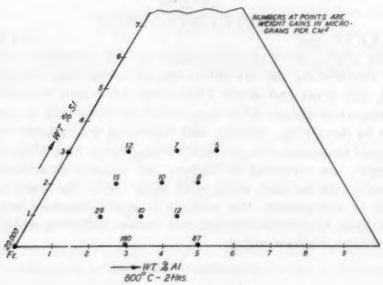
An alloy steel containing, among others, nickel, manganese, molybdenum, carbon and an element such as calcium, offers relatively high strength and excellent toughness at cryogenic temperatures.

3,811,874

OXIDATION RESISTANT IRON BASE ALLOY

Elmer J. Caule, New Haven; Philip R. Sperry, North Haven; Michael J. Pryor, Woodbridge, and James A. Ford, North Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. Nos. 66,866, Aug. 25, 1970, Pat. No. 3,730,779, and Ser. No. 750,991, Aug. 7, 1968, abandoned. This application Aug. 13, 1971, Ser. No. 171,432
Int. Cl. C22c *39/54*
U.S. Cl. 75—124 2 Claims



Iron base alloys are disclosed containing certain alloying additions, which alloys exhibit unique and unexpectedly low weight gains when exposed to oxidizing environments. One of the major advantages of the alloys of the present invention lies in their moderate cost, especially as compared to other oxidation resistant iron base alloys, such as the various grades of stainless steel. The oxidation resistance of the alloys of the present invention is imparted through the formation of a tenacious, compact oxide film.

3,811,875

FREE MACHINING AUSTENITIC STAINLESS STEEL ALLOY

Kermit J. Goda, Jr., Leesport, and Grant M. Aulenbach, Mohnton, both of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 855,416, Sept. 4, 1969, Pat. No. 3,645,722. This application Jan. 24, 1972, Ser. No. 220,108
Int. Cl. C22c *39/20*
U.S. Cl. 75—124 12 Claims

Austenitic stainless steel alloy containing about 10 percent to 26 percent chromium, 4 to 46 percent nickel, 0.4 to 15 percent manganese, 0.015 to 0.75 percent sulfur and/or selenium, 0.5 to 10 percent copper, 0.25 to 2 percent aluminum, 0.001 to 0.1 percent tellurium, and the balance being iron, optional elements and incidental impurities. Austenitic compositions are provided having improved free-machining properties or an improved combination of free-machining and corrosion-resistance properties in selected media.

3,811,876

SILVER ALLOYS HAVING HIGH SULPHURATION RESISTANCE

Hiroshi Harigaya; Kazutomo Kasai, both of Suwa, and Michio Asahina, Okaya, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 5,917, Jan. 26, 1970, abandoned. This application July 13, 1972, Ser. No. 271,326
Claims priority, application Japan, Feb. 5, 1969, 44-8289
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R 7 Claims

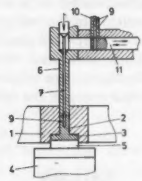
Tarnish-resistant silver alloys which retain the malleability and silver-white appearance of the pure metal containing tin, indium and zinc in specified concentration ranges. These elements are synergistic in their effects. Small quantities of Ti, Zn, Be, Cr, Si, Al, Ge and Sb when used in addition to Sn, In and Zn further increase resistance to tarnishing by sulphur-containing materials.

3,811,877

METHOD FOR MANUFACTURING ANTI-SKID MEANS INTENDED FOR VEHICLE TIRES

Lennart Hakka, Helsinki, Finland, assignor to Oy Airam AB, Helsinki, Finland

Filed Apr. 27, 1972, Ser. No. 248,024
Int. Cl. B22f *5/00*
U.S. Cl. 75—208 R 3 Claims



A method for manufacturing anti-skid means for vehicle tires consists essentially of the following steps:

Metal powder is supplied into a mould.

The mouth of the mould is closed by a plunger which has a rod located centrally within the plunger. The plunger is depressed into the powder inside the mould so as to form a hole.

Pre-compression is carried out in the mould.

The rod is pulled up and a hard metal insert is introduced into the mould.

The rod is used to press the insert into correct position.

Final compression is carried out in the mould. At the bottom part of the mould the base of the anti-skid means is formed.

The completed anti-skid means are removed from the mould.

3,811,878

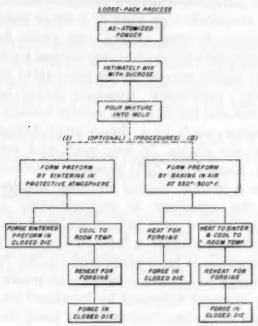
PRODUCTION OF POWDER METALLURGICAL PARTS BY PREFORM AND FORGE PROCESS UTILIZING SUCROSE AS A BINDER

Hung-Chi Chao, Monroeville; Robert R. Judd, Murrysville; Roger L. Rueckl, Murrysville, and Charles K. Russell, Murrysville, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1972, Ser. No. 312,461

Int. Cl. B22f *1/00, 3/00*

U.S. Cl. 75—211 **7 Claims**


LOOSE-PACK PROCESS
AS-ATOMIZED POWDER
INTIMATELY MIX WITH SUCROSE
POUR MIXTURE INTO MOLD
(1) (OPTIONAL) (PROCEDURES) (2)
FORM PREFORM BY SINTERING IN PROTECTIVE ATMOSPHERE
FORM PREFORM BY BAKING IN AIR AT 350°-500° F.
FORGE SINTERED PREFORM IN CLOSED DIE
COOL TO ROOM TEMP.
REHEAT FOR FORGING
FORGE IN CLOSED DIE
HEAT FOR FORGING
FORGE IN CLOSED DIE
HEAT TO SINTER & COOL TO ROOM TEMP.
REHEAT FOR FORGING
FORGE IN CLOSED DIE

Metal particles are intimately mixed with a sufficient amount of sucrose to effect the desired degree of deoxidation and/or carburization. The mixture is poured into a mold and is then processed by (a) baking at low temperature to form a green compact with sufficient handling strength for further sintering and/or hot working or (b) heating to above sintering temperature to form a stronger compact similarly useful for hot forging.

3,811,879

PHOTOCONDUCTIVE CHARGE-TRANSFER COMPLEX WITH CRYSTALLIZATION PREVENTER

Jean-Pierre Montillier, Manchester, Conn., assignor to Pitney-Bowes, Stamford, Conn.

Filed Dec. 1, 1972, Ser. No. 311,223

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **2 Claims**

The invention relates to a photoconductive insulating coating composition, which includes a crystallization prevention agent. The photoresponse of a poly N-vinyl carbazole-trinitrofluorenone charge transfer complex can be improved by increasing the trinitrofluorenone content. This increase is limited by the tendency of the coating to crystallize at a trinitrofluorenone-poly N-vinyl carbazole molar ratio of greater than 1/1. The use of dicarbazolyl cyclobutane as a crystallization prevention agent permits the use of ratios of greater than 1.23/1, even with high curing temperatures.

3,811,880

METHOD AND MATERIALS FOR CONTROL OF CONTACT ELECTROSTATIC DEVELOPMENT

Luther C. Browning, Palatine, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Continuation of Ser. No. 35,884, May 8, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 238,699

Int. Cl. G03g *13/08*

U.S. Cl. 96—1.4 **2 Claims**

Magnetically attractable conductive carrier particles such as iron, are treated with resins such as, for example, nitrocellulose, acrylic polymers, polyvinyl chloride polymers and chlorinated rubber. The resin as applied constitutes 2 percent by weight of the weight of iron. The treatment changes the triboelectric charge generated when the toner particles carried on the resin coated iron are separated by attraction to an electrostatic image area. The charge generated is in the range of 0.4 volts to 4.0 volts per milligram of iron and toner mixed and its magnitude will depend on the type of resin. The resin treatment also affects the direction of the toner, i.e., either positive or negative relative to the image area to be developed.

3,811,881

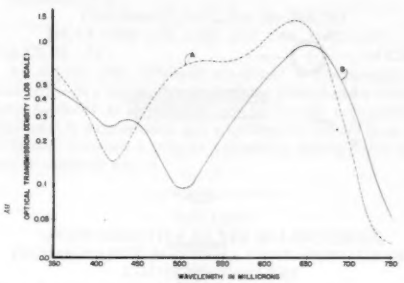
PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING NAPHTHOL SULFONAMIDONAPHTHALIDES AS OPTICAL FILTER AGENTS

Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 29, 1971, Ser. No. 193,746

Int. Cl. G03c *7/00, 5/54, 5/30, 1/48, 1/40, 1/84*

U.S. Cl. 96—3 **37 Claims**



This invention relates to a class of indicator dyes useful as optical filter agents in photographic processes to protect a selectively exposed photosensitive material from further exposure during processing in the presence of incident light. Such dyes comprise 3,3-disubstituted 6-sulfonamido naphthalides wherein the 3,3 substituents are p-hydroxynaphthyl radicals.

3,811,882

WIPE ON COLOR PROOFING PROCESS AND PRODUCT

Vincent Henry, New York, N.Y., assignor to VJG, Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,846

Int. Cl. G03c *7/16*

U.S. Cl. 96—13 **21 Claims**

A process of color proofing by a wipe on method and color proof product produced thereby wherein the color proof process comprises coating at least one side of a paper with a bichromate gelatin emulsion and thereafter drying the same; exposing the emulsion through a color separation negative so as to expose a portion of the gelatin and effect hardening of

the exposed gelatin; applying a first desired color, i.e., pigment formulation, to the gelatin emulsion; washing the coated paper to remove the unhardened gelatin and thereafter drying the same; coating the paper again with the bichromate gelatin emulsion, drying the same and exposing this further emulsion through a second color separation negative so as to again cause the exposed gelatin to harden; applying a second desired color to the gelatin and drying the coated paper and finally washing the coated paper to remove the unhardened gelatin with subsequent drying. The steps of applying the bichromate gelatin emulsion, exposing the emulsion through a color separation negative, applying a desired color and washing the paper to remove unhardened gelatin can be repeated for as many colors as desired. One or both sides of the paper can be advantageously processed in the above manner to provide a color proof substantially indistinguishable from the actual copies made with subsequently produced printing plates. Additional variations of the above process are applicable including exposing the emulsion through more than one separation negative at a time with overprinting if desired.

3,811,883

PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING NAPTHOFURANEDIONES

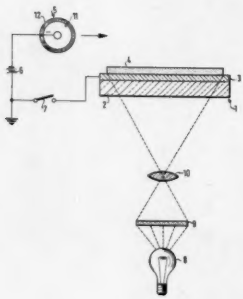
Georg Zographos, Zurich, and Christoph Frey, Oberwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 13, 1971, Ser. No. 207,179

Claims priority, application Switzerland, Dec. 16, 1970, 18616/70

Int. Cl. G03g *17/00, 5/00*

U.S. Cl. 96—1.3 **4 Claims**



Use of 4,4′-diamino-1,1′-dianthraquinonyl, naphthofurandiones, quinophthalones and phthalimidopyrazolones in the photoelectrophoretic production of images.

3,811,884

PROCESS FOR FORMING IMAGES

Eiichi Inoue, Tokyo; Takao Nakayama, Kanagawa; Yutaka Oka, and Yasuo Nakai, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken and Dai Nippon Printing Co., Ltd., Tokyo, both of, Japan, by said Nakayama, Oka, and Nakai

Filed June 14, 1972, Ser. No. 262,522

Claims priority, application Japan, June 18, 1971, 46-43273; June 18, 1971, 46-43274

Int. Cl. G03c *5/04, 5/24, 1/72*

U.S. Cl. 96—27 R **15 Claims**

An image of an organic coloring agent is formed by imagewise exposing a layer of an organic coloring agent formed on a base to light. Said exposed layer of the organic coloring agent is treated with a solvent to remove the unexposed portions of said layer. Said exposed layer of the organic coloring agent is contacted with an image-receptive material, they are treated with a solvent to transfer the unexposed portions of said layer onto the image-receptive material. By exposing light on the layer of the organic coloring agent, the exposed portions of said layer of the organic coloring agent is colored, discolored or faded.

3,811,885

LASER STABILIZATION AND/OR PHOTODEVELOPMENT OF SILVER HALIDE MATERIALS

John C. Marchant, and John R. Tinney, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 6,955, Jan. 29, 1970, now Defensive Publication No. T877,006. This application June 29, 1972, Ser. No. 267,297

Int. Cl. G02c *5/04;* **G03c** *5/32, 1/02*

U.S. Cl. 96—27 R **8 Claims**

This disclosure relates to radiation-sensitive systems such as a silver halide radiation-sensitive system wherein a spot laser beam is used to stabilize an area of a silver halide radiation-sensitive element. In one aspect, the silver halide system preferably stabilized and/or photodeveloped by this technique contains silver halide grains having polyvalent metal ions occluded therein, preferably trivalent metal ions such as bismuth, iridium and the like, said system further comprising a halogen acceptor, such as a direct-print halogen acceptor, contiguous to the grains. In one preferred embodiment, a high-intensity, imagewise, light exposure which can be a laser light exposure is used to record an image on the silver halide layer when the emulsion is appropriately sensitized. A defocused laser is then used to heat-stabilize the silver halide in the image exposure areas; a laser of a second wavelength is used if the emulsion is laser-sensitized for the first exposure. Subsequent image exposures can then be made on the same photographic element followed by localized image stabilization. In certain instances, low-intensity laser beams or other localized light sources can be used to develop the image in localized areas after stabilization.

3,811,886

METHOD OF MAKING LITHOGRAPHIC MASTER

Joan M. W. Mukherjee, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 847,393, Aug. 4, 1969, Pat. No. 3,679,414. This application May 10, 1972, Ser. No. 252,097

Int. Cl. G03f *7/02;* **B41m** *5/00, 3/00*

U.S. Cl. 96—33 **2 Claims**

A lithographic plate comprises a hydrophilic backing having an oleophilic solvent-removable coating which becomes solvent-resistant when heated in reactive association with an oxidizing agent. The coating comprises a polyphenolic reducing agent together with a lesser amount of chemically inert film-forming binder.

3,811,887

PHOTOGRAPHIC MATERIAL COMPRISING BIS-ACYLHYDRAZINIUM COMPOUNDS

Masao Ishihara; Tsuneo Walda; Hisashi Yamaguchi, all of Tokyo, and Sadao Sugita, Hanno, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd, Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,890

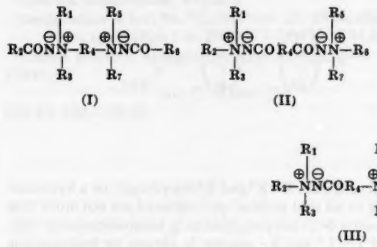
Claims priority, application Japan, Dec. 18, 1970, 45-113102

Int. Cl. G03c *1/82*

U.S. Cl. 96—50 R **5 Claims**

Antistatic agents for use in light-sensitive silver halide

photographic material comprise bis-aminimide compounds having the formula:



(I) (II) (III)

wherein R_1, R_3, R_5 and R_7 are individually a lower alkyl group; R_2 and R_6 are individually an alkyl, arakyl or aryl group or a hetero ring; and R_4 is a divalent group.

3,811,888

COMPOSITION FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS

Haruo Shibaoka, and Sachio Matsushita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1972, Ser. No. 223,374

Claims priority, application Japan, Feb. 3, 1971, 46-4126

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 R **9 Claims**

Composition for processing a silver halide photographic light-sensitive element containing ethylene-bis(β-oxyethylamine) tetraacetic acid or its alkali salt. The compound has a calcium ion-chelating or masking ability superior to that of EDTA.

3,811,889

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL WITH ANTISTATIC LAYER

Koutarou Endou; Masakazu Yoneyama; Nobuo Yamamoto; Motohiro Ujihara, and Yosuke Nakajima, all of Kanagawa, Japan, assignors to Fugi Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 3, 1971, Ser. No. 177,815

Claims priority, application Japan, Sept. 4, 1970, 45-77644

Int. Cl. G03c *1/04, 1/82*

U.S. Cl. 96—67 **13 Claims**

A light-sensitive photographic material comprising a support having coated thereon at least one silver halide emulsion layer containing

(a) an anionic polymer having a carboxyl group or an alkali metal salt thereof as a side chain thereof, and

(b) at least one of a cationic surface active agent and a betaine-type amphoteric surface active agent is disclosed.

3,811,890

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Noboru Ohta; Yasushi Oishi, and Hirozo Ueda, all of Kanagawa, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

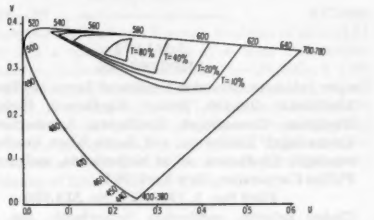
Filed Dec. 8, 1971, Ser. No. 206,060

Claims priority, application Japan, Dec. 8, 1970, 45-108438

Int. Cl. G03c *1/76, 3/00, 7/16*

U.S. Cl. 96—74 **12 Claims**

A multi-layered photographic material comprising a support and (a) blue-sensitive, (b) green-sensitive, and (c) red-sensitive emulsion layers on said support, these layers containing colorless and diffusion-resistant couplers forming yellow, magenta, and cyan respectively upon coupling, wherein at least one of the layers contains a combination of two couplers differing in coupling activity rate by at least 1.5 times from each other and giving two dyes of the same absorption area, that is, 400 to 500 mμ for (a), 500 to 600 mμ for (b), and 600 to 700 mμ for (c). Especially preferred couplers are



acylacetanilides for (a), 5-pyrazolones, indazolones and pyrazolobenzimidazoles for (b), and phenols and α-naphthols for (c). The specific combination of couplers contributes to the widening of the color gamut of the color photographic material.

3,811,891

SILVER HALIDE PHOTOGRAPHIC ELEMENT CONTAINING A VINYLSULFONYL COMPOUND HARDENER AND AN ACRYLIC UREA AS FORMALDEHYDE SCAVENGER

Robert S. Darlak, Penfield, and Charles J. Wright, Rochester, both of N.Y., assignors to Eastman Koadak Company, Rochester, N.Y.

Filed June 27, 1972, Ser. No. 266,767

Int. Cl. G03c *1/76, 1/48, 1/30, 1/06, 1/40, 1/30*

U.S. Cl. 96—74 **14 Claims**

An acyclic urea aldehyde scavenger is concurrently associated with a hardenable hydrophilic colloid and a vinylsulfonyl hardener. In a preferred form the acyclic urea aldehyde scavenger is incorporated into a hydrophilic colloid layer that is located between a coupler containing photographic layer and an aldehyde source.

3,811,892

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING CYAN-COLORED COUPLERS

Teruo Kagami, Iruma; Mitsuto Fujiwhara, and Takaya Endo, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co. Ltd.

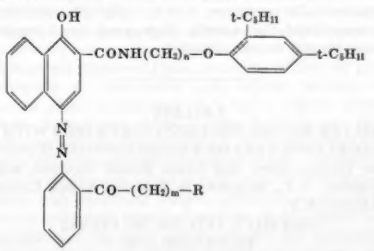
Filed July 24, 1972, Ser. No. 275,211

Claims priority, application Japan, July 27, 1971, 46-55665

Int. Cl. G03c *1/76, 1/40*

U.S. Cl. 96—74 **6 Claims**

A light-sensitive, silver halide, color photographic material having a cyan-colored coupler of the general formula,



wherein *n* is an integer of 1 to 4; *m* is an integer of 0 to 2; R is a phenyl group or an alicyclic group, may be used in the form of

a solution in an organic solvent which has an automasking mechanism for compensating the drawback in color reproduction of the light-sensitive, silver halide, color photographic material, said cyan-colored coupler having such properties as excellent solubility in high boiling solvents, favorable color-forming properties, and being capable of giving less deposition, thereby causing less graininess of the resulting image.

3,811,893

PHOTOMASK

Casper Johannes Gerardus Ferdinand Jannssen, Emmasingel, Eindhoven; Hendirk Jonker, Eindhoven; Pieter Willem Haaijman, Emmasingel, Eindhoven; Lambertus Postma, Emmasingel, Eindhoven, and Jacob Klass Vondeling, Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 319,986

Claims priority, application Netherlands, Jan. 8, 1972, 7200295

Int. Cl. G03b

U.S. Cl. 95—1 R **2 Claims**

A photomask on a transparent, dimensionally stable substrate whose pattern consists of a phosphorus-containing or boron-containing nickel which is adhered to the substrate through a metal nuclei image which in turn overlies a transparent film of a photosensitive semiconducting oxide. To increase wear resistance and reduce reflection a top layer of transparent semi-conducting oxide may be provided.

3,811,894

PHOTOSENSITIVE ALUMINUM PLATE AND PROCESS FOR PREPARING THE SAME

Teruhiko Yonezawa, and Akira Shirai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 31, 1970, Ser. No. 68,091

Claims priority, application Japan, Aug. 29, 1969, 44-68410

Int. Cl. G03c *1/94*

U.S. Cl. 96—86 R **3 Claims**

A photosensitive plate comprising an aluminum support containing from 0.05 to 1.0 percent by weight copper and having thereon a finely porous oxide layer formed by the anodization of said support, said oxide layer carrying a photosensitive material, is disclosed. A process for preparing the photosensitive aluminum plate is also disclosed.

3,811,895

SENSITIZED COMPOUNDS AND ELEMENTS

Sanford H. Ehrlich, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,979

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 **22 Claims**

The sensitivity of radiation-sensitive polyyne compounds may be extended to wavelengths in the x-ray region by the use of organometallic sensitizers, such as triphenylbismuthine and hexaphenyldilead, for example. High-speed direct-imaging x-ray elements may thus be obtained.

3,811,896

SILVER HALIDE EMULSION STABILIZED WITH ISOSELENOUREAS OR KETOSELENOZOLIDINES

Arthur Herman Herz, and Edwin Russell Westcott, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

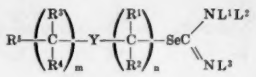
Filed May 3, 1971, Ser. No. 139,942

Int. Cl. G03c *1/34*

U.S. Cl. 96—100 **6 Claims**

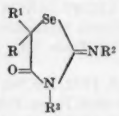
Photographic silver halide emulsions and elements comprising said emulsions are stabilized against fog by selenium-containing organic compounds having the formulae:

(I)



where each of R^1, R^2, R^3, R^4 and R^5 is hydrogen or a hydrocarbon residue or an acid residue, or combined are not more than one selenourea derivative or its salts, a bisisoselenourea compound and L^1, L^2 and L^3 can be hydrogen or hydrocarbon groups which can be linked together to form a completed heterocyclic ring and m is an integer of from about 0 to about 4 and n is an integer of from about 0 to about 4 such that their combined total is a positive integer of not more than about 8; and —Y— is a divalent group; or

(II)



as a free base or its salts in which the groups R, R^1, R^2 and R^3 are each hydrogen or hydrocarbon residues.

3,811,897

METHOD FOR INCREASING THE VISCOSITY OF DILUTE PHOTOGRAPHIC EMULSIONS AND ELEMENTS PREPARED THEREBY

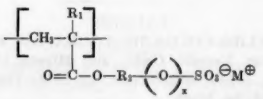
John M. Babbit; Richard W. Spayd, and Nayyir F. Irani, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,389

Int. Cl. G03c *1/04*

U.S. Cl. 96—114 **8 Claims**

A method for increasing the viscosity of dilute solutions of hydrophilic colloids is desired, by incorporating therein a viscosity increasing concentration of a polymer comprising at least about 50 mole percent of units of the structure:



wherein R_1 is hydrogen or a lower alkyl group of from one to four carbon atoms, R_2 is a lower alkylene group of from one to four carbon atoms, x is zero or one and M is a moiety selected from the group consisting of ammonium, alkali metal cations, salt-forming amines and mixtures thereof.

3,811,898

HEAT-INSULATING ANTIPIPING COMPOSITIONS

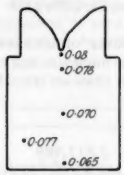
Bernhard Carl Rumbold, and John Edward Cartwright, both of Nechells, England, assignors to Fiseco International Limited, Birmingham, England

Continuation of Ser. No. 92,208, Nov. 23, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 334,017

Claims priority, application Great Britain, Nov. 25, 1969, 57595/69

Int. Cl. B28b 7/36

U.S. Cl. 106—38.28 6 Claims



Antipiping compounds for use in metal casting comprise a refractory heat insulating material and 10 – 40 percent by weight of acid-treated graphite.

3,811,899

INHIBITING GRAIN-GROWTH IN CERAMIC MATERIALS

Donald Stibbs, Dorking; Raymond Thompson, Esher, and Oswald William John Young, Surbiton, all of England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed June 19, 1972, Ser. No. 264,172

Claims priority, application Great Britain, July 23, 1971, 34686/71

Int. Cl. C04b 35/56, 35/58, 35/60

U.S. Cl. 106—43 4 Claims

Grain growth in hot-pressed ceramic materials is inhibited by treating the ceramic powder with a metal alkoxide and decomposing the alkoxide to the corresponding oxide prior to hot-pressing.

3,811,900

REFRACTORY ARTICLE HAVING HIGH THERMAL SHOCK RESISTANCE

Wayne M. Fassell, Newport Beach, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Jan. 7, 1972, Ser. No. 216,238

Int. Cl. C04b 35/58

U.S. Cl. 106—55 10 Claims

Highly ordered boron nitride flakes having a greater surface dimension between about 0.003 inch and 0.030 inch and a thickness less than one-tenth of the greater surface dimension are mixed homogeneously with a refractory material and formed into a refractory article. The boron flakes intersect and arrest microcracks formed in the article by thermal shock or other stress producing conditions. Suitable highly ordered boron nitride flakes can be made by grinding pyrolytic boron nitride obtained by reacting a gaseous mixture of boron trichloride and ammonia.

3,811,901

NON-TOXIC INVERT ANALOG GLASS COMPOSITIONS OF HIGH MODULUS

James F. Bacon, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 874,673, Nov. 6, 1969, abandoned. This application Apr. 21, 1972, Ser. No. 246,294

Int. Cl. C03c 3/04

U.S. Cl. 106—50 8 Claims

Glass compositions having a Young's modulus of at least 15 million psi and a specific modulus of at least 110 million inches consisting essentially of, in mols, 15–40% SiO_2, 6–15% Li_2O, 24–45 percent of at least two bivalent oxides selected from the group consisting of Ca, ZnO, MgO and CuO; 13–39 percent of at least two trivalent oxides selected from the group consisting of Al_2O_3, Fe_2O_3, B_2O_3, La_2O_3, and Y_2O_3 and up to 15 percent of one or more tetravalent oxides selected from the group consisting of ZrO_2, TiO_2 and CeO_2.

3,811,902

CONTROL OF POLYMER DEGRADATION RATE

Thomas J. Podlas, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 8, 1972, Ser. No. 304,701

Int. Cl. C08f 45/24; C08b 21/26

U.S. Cl. 106—169 4 Claims

The rate of degradation of anionic water-soluble polymers in the presence of persulfate ior is reduced and controlled by the presence of divalent manganese ion. The polymer can be either cross-linked or uncross-linked. Useful polymers to which the invention is applied are anionic acrylamidecopolymers and carboxymethyl cellulose.

3,811,903

SILICONE COATED INJECTION MOLDABLE THERMOPLASTIC MATERIAL

Michael Daskivich, Cleveland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Continuation of Ser. No. 133,363, April 12, 1971, abandoned. This application Feb. 8, 1973, Ser. No. 330,706

Int. Cl. C08b 21/08; C08f 45/52

U.S. Cl. 106—187 12 Claims

Granules of solid, wax containing injection moldable, thermoplastic composition are coated with a silicone fluid to provide a material which is especially useful for making injection molded patterns to be used in the lost pattern processes of investment casting.

3,811,904

NOVEL COATING COMPOSITIONS AND THEIR PREPARATION

John C. Zola, 2662 S. Tenth Ave., Arcadia, Calif.

Continuation of Ser. No. 77,693, Oct. 2, 1970, abandoned, which is a continuation of Ser. No. 615,044, Feb. 8, 1967, abandoned, which is a continuation-in-part of Ser. No. 201,274, June 11, 1962, abandoned. This application July 10, 1972, Ser. No. 270,021

Int. Cl. C08b 21/12; C08f 45/04, 45/28

U.S. Cl. 106—193 J 25 Claims

Disclosed are non-aqueous, substantially all organic multicolor coating compositions of two or more phases consisting of at least one dispersed phase consisting of discrete globules or droplets of film-former and organic solvent, which dispersed phase is dispersed in a liquid organic dispersing medium. At least some of the dispersed globules are different in color from the dispersing medium, and a substantial number of said globules are at least 25 microns in size. The dispersions employ in the discrete globules a polymeric film former of sufficiently high molecular weight, preferably cross-linked, to render a colloidally dissolved solution in an organic solvent immiscible with the same organic solvent not containing the polymeric film former. The dispersing medium may or may not contain a second film-former.

3,811,905
AGGREGATE FOR ROAD CONSTRUCTION AND METHOD FOR THE PRODUCTION OF SAID AGGREGATE

Karl Kristian Kobs Kroyer, Vestre Kongevej 10, and Tage Fredsted, both of Viby J., Denmark, assignors to said Kroyer, by said Fredsted, a part interest

Filed June 14, 1972, Ser. No. 262,673
Claims priority, application Great Britain, June 17, 1971, 28460/71
Int. Cl. C08h *17/04*
U.S. Cl. 106—288 B 7 Claims

An aggregate material for road construction comprising sharp-edged hard particles bonded to the surface of the particles of a basic aggregate by a binder.

3,811,906
GOLD POWDER

Oliver A. Short, and Richard V. Weaver, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

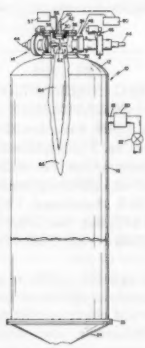
Continuation-in-part of Ser. No. 159,486, July 2, 1971, Pat. No. 3,725,035, which is a continuation-in-part of Ser. No. 15,212, Feb. 27, 1970, abandoned. This application Mar. 21, 1973, Ser. No. 343,371
Int. Cl. C09c *1/62*
U.S. Cl. 106—290 3 Claims

Metallizing compositions of certain percipitated gold flakes and spheres in a liquid vehicle, useful for printing patterns in the electronics industries.

3,811,907
PROCESSING OF SILICATE ORES AND PRODUCT THEREOF

Lawrence W. Scammon, Jr., Concord; Clarence L. Grant, Durham, and Phillip H. Wilks, Manchester, all of N.H., assignors to Humphreys Corporation, Bow, N.H.

Division of Ser. No. 168,687, Aug. 3, 1971, Pat. No. 3,749,763. This application Mar. 12, 1973, Ser. No. 340,451
Int. Cl. C09c *1/62*
U.S. Cl. 106—299 9 Claims



Separating silica from a metal silicate ore such as zircon by heating particles of the ore above the dissociation temperature of the ore without coalescence of the particles, and quenching the heated particles immediately so that the particle temperature decreases from above to below the dissociation temperature in less than 0.1 seconds. Dissociated zircon particles produced by this process have extremely small zirconia crystallites having dimensions less than about 0.2 microns in fused amorphous silica. Zirconia is produced from these dissociated zircon particles by leaching in an aqueous alkali medium.

3,811,908
PROCESS FOR THE MANUFACTURE OF TITANIUM DIOXIDE PIGMENTS

Luigi Piccolo; Benedetto Calcagno, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

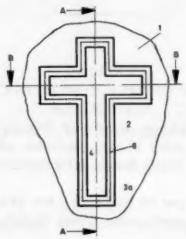
Filed Aug. 3, 1972, Ser. No. 277,548
Claims priority, application Italy, Nov. 17, 1971, 31197/71
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 5 Claims

Fluid organic complexes of aluminium trichloride with hydrocarbons are used as nucleants and rutilising agents in the vapor phase oxidation of titanium tetrachloride to give titanium dioxide pigments.

3,811,909
METHOD OF MAKING STONE RELIEFS

Hermann Bertsch, Hindenburgstr. 3, Donaueschingen, Germany

Filed Dec. 17, 1969, Ser. No. 889,851
Claims priority, application Germany, Dec. 19, 1968, 1815742
Int. Cl. B44d *1/52*; B65b *33/00*
U.S. Cl. 117—8.5 9 Claims



Contaminants are removed from an exposed surface of a stone element on which a relief is to be produced. The exposed surface is covered with a self-adhesive foil which is intimately adhered thereto in surface-to-surface contact and which is resistant to etching fluid capable of attacking the stone element. An illustration of the desired relief is provided on the exposed side of the foil. Successive sections of the foil are removed, each matching the outline of a portion of the illustration to thereby expose corresponding portions of the surface. To the respectively exposed portions of the surface etching fluid is applied of a concentration and for a period of time requisite to etch the respective exposed portion to desired depth, before another section of the foil is removed and etching fluid is applied to the newly exposed portion.

3,811,910
TWO-STEP METHOD OF MAKING A COLOR PICTURE TUBE

Santokh S. Labana, Dearborn Heights; Amos Golovoy, Westland, and Yun Feng Chang, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 17, 1972, Ser. No. 254,231
Int. Cl. H01j *9/20*; B44d *1/094*
U.S. Cl. 117—17 10 Claims

In manufacturing a color picture tube, a plurality of color phosphor dots are placed on a face plate of the tube. A

shadow mask used with the tube is made with a plurality of apertures arranged in a predetermined pattern. Each of these apertures have a predetermined size. The predetermined size of each aperture is reduced to a smaller size when the mask is used in placing the phosphor dots on the face plate. The size of each of the apertures is returned to its original, predetermined size when the mask is used for operating the color tube. This disclosure teaches an improvement in the method of reducing and, thereafter, returning the size of the apertures to the predetermined size. The improvement includes a two-step application of powder coating compositions to the shadow mask to reduce the size of the apertures. The first step in the method partially reduces the apertures and the second step in the method reduces the apertures to a final size needed for laying down the phosphor dot pattern on the face plate. Since a powder coating composition is used, the materials may be easily removed from the mask by utilization of a solvent for the composition.

3,811,911

FLEXIBLE PAVEMENT COATING METHOD

Tadashi Doi, Wakayama, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 28,909, April 15, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,218

Claims priority, application Japan, Apr. 22, 1969, 44-31176

Int. Cl. B44d *1/00*

U.S. Cl. 117—33 **8 Claims**

A process for applying to the surface of a flexible pavement material a protective and anti-skid coating of a polyepoxide composition, which can contain pigments and aggregates, comprising an epoxy resin, oleylamine and the pigments and aggregate particles. The coating increases surprisingly the durability of said flexible pavement material.

3,811,912

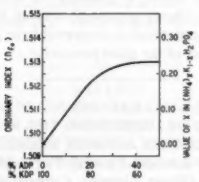
METHOD OF MAKING EPITAXIAL FILM OPTICAL DEVICES

Vellayan Ramaswamy, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1972, Ser. No. 317,276

Int. Cl. B29d *11/00*; **B44d** *5/06*; **C03c** *17/00*

U.S. Cl. 117—33.3 **7 Claims**



Thin film optical circuit devices, such as wave guides, electrooptic devices, etc., are prepared on KH_2PO_4 (KDP) substrates by epitaxial growth of single crystals having the compostion $(NH_4)_x K_{1-x} H_2PO_4$, where x varies from about 0.05 to about 0.2. Such films, which have low losses, are matchable to many glassy transmission media. The difference in refractive index between substrate and epitaxial film may be controlled by varying the composition of the epitaxial film.

3,811,913

METHOD FOR PREPARING A SUPPORT FOR A PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tsuneo Kasugai, and Nobuhiko Minagawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 13, 1970, Ser. No. 63,376

Claims priority, application Japan, Aug. 12, 1969, 44-64038

Int. Cl. C03c *1/78*

U.S. Cl. 117—34 **15 Claims**

A method for preparing a support for a photographic light-sensitive material comprising applying a subbing solution to a photographic light-sensitive emulsion coating surface of a member selected from the group consisting of a polyethylene film and a polyethylene coated paper, said subbing solution being a solution or a dispersion of a member selected from the group consisting of a gelatin and a maleic anhydride copolymer and having a surface tension at 35°C ranging from 23 dyn/cm to 50 dyn/cm and applying ultraviolet radiation to the thus prepared surface, is disclosed.

3,811,914

METHOD OF TRANSFERRING IMAGES PRODUCED BY LIQUID DEVELOPMENT

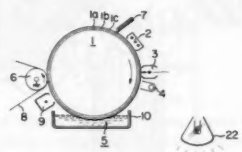
Takashi Saito; Shuniti Kubu, both of Tokyo, Japan, and Canon Kabushiki Kaisha, 03, Tokyo, Japan

Filed Aug. 30, 1971, Ser. No. 176,096

Claims priority, application Japan, Sept. 4, 1970, 45-77872

Int. Cl. G03g *13/16*

U.S. Cl. 117—37 LE **4 Claims**



In an electrophotographic process, visual images obtained by developing electrostatic latent images with a liquid developer are transferred to a transferring paper having oil absorbing coefficient ranging from 1.0×10^{-4} to 5.0×10^{-2} cm./sec. and smoothness by Bekk tester ranging from 30 to 150 seconds.

3,811,915

PRINTING METHOD FOR FORMING THREE DIMENSIONAL SIMULATED WOOD GRAIN, AND PRODUCT FORMED THEREBY

Harry Burrell, North Caldwell, and Robert C. Miller, Jr., Roseland, both of N.J., assignors to Inmont Corporation, New York, N.Y.

Filed Apr. 27, 1971, Ser. No. 137,893

Int. Cl. B41m *3/00*

U.S. Cl. 117—45 **6 Claims**

A printing method, the ink used therein and the product formed thereby.

The printing method is a method for producing simulated wood grain, or other patterned surfaces, preferably comprising the steps of

a. coating a substrate with a ground coat
b. applying to the dried ground coat a graining ink comprising a conventional graining ink but additionally containing from about 0.1 percent to about 3 percent by weight of a silicone fluid
c. coating the grain-printed, ground-coated substrate with a conventional protective top coat.

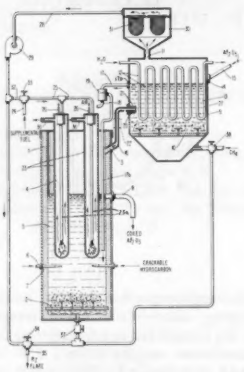
The silicone tends to repel the top coat, forming a three dimensional grained or patterned effect.

3,811,916

METHOD FOR CARBON IMPREGNATION OF ALUMINA

Allen S. Russell, New Kensington; Noel Jarrett, Lower Burrell; Marshall J. Bruno, Greensburg, and John A. Remper, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 7, 1971, Ser. No. 178,079
Int. Cl. B44d *1/02*
U.S. Cl. 117—46 CB **33 Claims**



Process for the preparation of selectively constituted carbon impregnated alumina through the thermal cracking of hydrocarbon in contact with a fluidized bed of particles of precoated high surface area alumina in a first zone to deposit carbon in situ thereon in conjunction with the deposition of residual crackable hydrocarbon from the first zone gaseous effluent on particles of uncoated high surface area alumina in a second zone and prior to their introduction into said first zone, and minimization of the amounts of free hydrogen attendant the resultant carbon impregnated product.

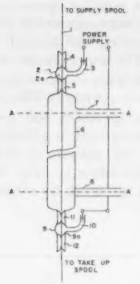
3,811,917

BORON DEPOSITION ON CARBON MONOFILAMENT

Russell J. Diefendorf, Elnora, N.Y., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,061
Int. Cl. C23c *1/00*
U.S. Cl. 117—47 R **4 Claims**

Amorphous boron is deposited in uniform thickness on continuous lengths of carbon monofilament substrate by contacting the substrate with boron trichloride and hydrogen (4:6) at 1,400–1,450°C. by admitting the reactive gases in tangential



flow around the filament, useful for forming boron filaments of up to 4 times the diameter of the carbon substrate.

3,811,918

PROCESS FOR PRODUCING PROTECTIVE GLASS COATINGS

Leon Levene, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 20, 1971, Ser. No. 210,104
Int. Cl. C03c *17/02*; B32b *15/00*
U.S. Cl. 117—47 H **24 Claims**

A process for providing a silicate glass coated and protected inorganic substrate which comprises applying a substantially gel resistant, mineral acid stabilized, clear solution having a pH of less than about 1.5 of a substrate compatible glass composition in the form of a glass precursor onto the substrate and then heating the precursor to a temperature and for a time sufficient to convert the precursor into a silicate glass coating on the substrate. The precursor is prepared by hydrolyzing prescribed silicon alkoxides with less than a stoichiometric amount of water so as to prepare a clear solution of a partially hydrolyzed silicon alkoxide, which partially hydrolyzed silicon alkoxide solution is then reacted with an aqueous solution of a metal oxide forming compound so as to form a solution of the precursor or with a metal alkoxide so as to form a clear solution of a further hydrolyzable metallosiloxane, which latter clear solution of the further hydrolyzable metallosiloxane is then reacted with either a quantity of water sufficient to hydrolyze residual alkoxy groups or with an aqueous solution of a metal compound which is convertible to a metal oxide so as to form a solution of the glass precursor.

3,811,919

NEW PROCESS FOR IMPROVING THE RESISTANCE OF SURFACES AGAINST EROSION

Pierre Lescop, Le Kremlin-Bicetre; Pierre Michel Teysseyre, Paris, and Joel Olivier Vigneau, Corbeil, all of France, assignors to Societe Nationale D'Etude & de Construction de Moteurs D'Aviation (SNECMA), Paris, France

Filed June 1, 1971, Ser. No. 149,016
Claims priority, application France, June 6, 1970, 70.20826
Int. Cl. B44d *1/14*
U.S. Cl. 117—62 **7 Claims**

There is disclosed a process for improving the resistance of the surface of a substrate against erosion and wear. The process includes coating the substrate with a coating consisting of fibers in a plastic matrix, the fibers being selected from materials wherein at least the surfaces thereof are coated with boron, boron carbide, or silicon carbide. At least a portion of the plastic matrix is removed from the surface, thereby expos-

ing some of the embedded fibers. The surface is then coated with a polyurethane material containing a quantity of particulate material wherein at least the surfaces thereof are of boron, boron carbide, or silicon carbide.

3,811,920
SILICON CARBIDE SURFACED FILAMENTS WITH TITANIUM CARBIDE COATING

Francis S. Galasso, Manchester, and Bernarr A. Jacob, Torrington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Jan. 5, 1972, Ser. No. 215,593
Int. Cl. D02g *3/00, 3/02*
U.S. Cl. 117—69 **2 Claims**

A composite filament suitable for use as a reinforcement in titanium or nickel matrices comprises a filamentary substrate having a silicon carbide surface layer and a thin, adherent outer layer consisting essentially of titanium carbide.

3,811,921
METHOD OF COATING GLASS SURFACE AND PRODUCTS PRODUCED THEREBY

James E. Crawford, and Richard H. Russell, both of Adrian, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 9, 1971, Ser. No. 206,494
Int. Cl. C03c *17/32;* **B44d** *1/20*
U.S. Cl. 117—72 **1 Claim**

The lubricity and the scratch resistance of a glass surface are improved by applying a pyrolyzable tin or titanium compound to the hot glass surface to form a substantially colorless tin or titanium oxide layer thereon, and then applying, directly upon the oxide layer, an aqueous solution of a water-soluble thermosetting polyamide which is a reaction product of (a) a diamino alkane having from two to eight carbon atoms and (b) a polycarboxylic acid or anhydride of the class consisting of aliphatic dicarboxylic acids and anhydrides having not more than six carbon atoms and benzene carboxylic acids and anhydrides having from three to four carboxyl groups, drying and setting the polyamide to produce a transparent, substantially colorless insoluble coating layer. The resulting dual coating has high lubricity, and affords scratch resistance which is much greater than that which would be imparted by either coating alone.

3,811,922
PROCESS FOR PRODUCING FOAM RUBBER-BACKED TEXTILES

Roy Clark, and Donald Westfield, both of Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

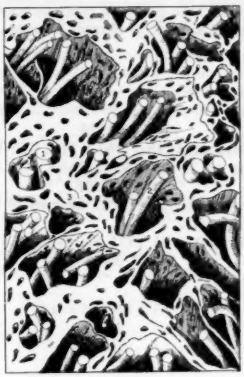
Continuation of Ser. No. 79,650, Oct. 9, 1970, abandoned. This application July 10, 1972, Ser. No. 269,981
Claims priority, application Canada, Nov. 5, 1969, 66680
Int. Cl. B44d *1/14;* **D05c** *15/04*
U.S. Cl. 117—76 T **9 Claims**

In the manufacture of carpets having an attached layer of latex foam rubber, it was known to apply a precoat of a compounded liquid latex onto the underside of the carpet before applying the foamed latex layer. It has now been found that the slow drying or poor foam structure at the carpet/foam rubber interface encountered in such prior processes can be overcome by use of a foamed precoat. The foamed precoat can be applied in much smaller amounts than the prior liquid precoats.

3,811,923
FIBER FLEECE CONTAINING A POLYMERIC REINFORCING MATERIAL

Klaus-Dieter Hammer, Finthen; Herbert Porrmann, Niedernhausen, and Ludwig Klenk, Hallgarten, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrick, Germany

Filed Oct. 27, 1971, Ser. No. 192,899
Claims priority, application Germany, Oct. 30, 1970, 2053497; Oct. 30, 1970, 2053442
Int. Cl. B32b *27/02;* **B44d** *1/14*
U.S. Cl. 117—76 T **11 Claims**



This invention relates to a fiber fleece based on synthetic fibers and containing a polymeric organic reinforcing material, and having, at a proportion of polymeric elastic reinforcing material of at least 10 per cent by weight and not more than 80 per cent by weight, calculated on the total weight of a base fleece having a density between 0.1 and 0.28 g/cm³, a tensile strength of at least 0.01 kg/mm², a tear propagation resistance of at least 7 kg/mm (according to IUP 8), and a tensile stress or not more than 0.03 kg/mm², measured in a tensile elongation test at an elongation of 10 per cent.

3,811,924
ARTICLE OF MANUFACTURE HAVING A GLOSSY SUBSTRATE SURFACE COATED WITH A MATTE SURFACE COATING

John F. Gallagher, and Martin Salo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 123,019, March 10, 1971, Pat. No. 3,733,293. This application Dec. 7, 1972, Ser. No. 313,045
Int. Cl. B44d *1/14*
U.S. Cl. 117—76 P **7 Claims**

It has been discovered that certain blends of polymers can be applied from an aqueous system to glossy surfaces and dried to yield coated surfaces that have a pleasing degree of roughness or "matte" and that are waterproof, abrasion resistant, anti-blocking, and essentially completely transparent to visible light.

The coatings are applied to the glossy surface in the form of an aqueous lacquer composition comprising

a. water;
b. dissolved in the water, an effective amount of ammonium salt of a copolymer of ethyl methacrylate and methacrylic acid; and
c. dispersed in the form of a latex through the solution of (b) in (a), an effective amount of a higher molecular weight poly(vinyl acetate).

3,811,925
METHOD OF APPLYING A HOT LUSTER COATING TO GLASS BY ELECTROSTATIC MEANS

Edward P. Nesteruk, c/o Engelhard Industries, 430 Mountain Ave., Murray Hill, N.J.

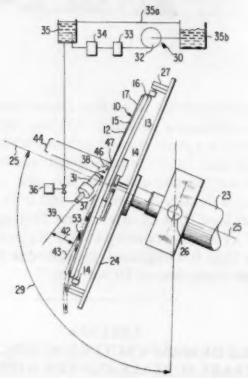
Filed Oct. 28, 1971, Ser. No. 193,547
Int. Cl. B05b *5/00;* **C03c** *17/20*
U.S. Cl. 117—93.4 R **20 Claims**

Hot, stable, solid substrates, e.g. glass, are coated by contact with an electrostatically-charged dispersion of an organic vehicle solution containing thio compounds of gold and silver, and one or more of iron 1,3-beta diketonate, bismuth alcoholate or caroxylate and silicon alcoholate. Preferred ingredients of the solution include gold and silver mercaptides and iron acetylacetonate, and a preferred solvent is methylene chloride.

3,811,926
METHOD FOR COATING ONLY THE CONVEX MAJOR SURFACE OF AN APERTURED MASK FOR A CATHODE-RAY TUBE

Bradford Knox Smith, Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,476
Int. Cl. B44d *1/08*
U.S. Cl. 117—101 **7 Claims**



A method for coating the convex major surface of a curved apertured mask for a cathode-ray tube including coating portions substantially filling and completely closing the final-sized apertures without coating the opposite concave major surface. The mask is rotated about an axis substantially normal to and passing through the central portion of the mask at a rotation rate insufficient to cause liquid coating material to fly off the surface by centrifugal force, the axis being inclined at about 100° to 130° measured from a vertical downward 0° reference. A stream of liquid material in excess of the amount required to coat the mask is projected into an upward trajectory and into contact with the convex surface of the rotating mask. The stream contacts the mask on an area above the axis with the stream substantially at the top of its upward trajectory, making an angle of less than 15° with a tangent to the contacted area. The excess liquid coating is allowed to drain from the rotating mask by gravity. After at least one revolution, the stream is removed from contact with the rotating mask, and the mask rotation is increased to a rotation rate sufficient to cause excess liquid to fly off the mask surface by centrifugal force.

3,811,927
PROCESS FOR VAPOR DEPOSITION ON GLASSY-CARBON SUBSTRATE

Louis A. Joo, Johnson City; Thomas W. Martin, and John A. McKee, both of Elizabethton, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

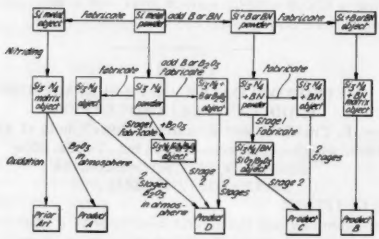
Filed Mar. 10, 1971, Ser. No. 122,993
Int. Cl. C23c *13/04*
U.S. Cl. 117—106 R **2 Claims**

Glassy-carbon monofilament containing additional sulfur in combined form, has "high-temperature creep" properties useful in the deposition of boron, boron carbide, silicon carbide, and pyrolytic graphite thereupon.

3,811,928
SILICON NITRIDE CERAMICS

John William Henney, Abingdon, and James William Samuel Jones, Blewbury, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 15, 1971, Ser. No. 189,583
Claims priority, application Great Britain, Oct. 20, 1970, 49855/70
Int. Cl. C04b *35/58*
U.S. Cl. 117—106 **8 Claims**

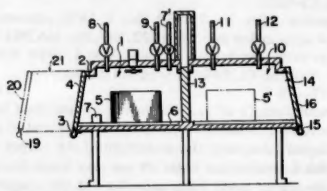


Shaped ceramic objects of silicon nitride are protected from oxidation by a coating comprising silica and boric oxide. The coating may be formed by heating a shaped mixture of silicon nitride and boron nitride in air to convert part to silica and boric oxide and causing a silica/boric oxide glass to flux and protect the object from further oxidation. The boron may be incorporated during oxidation but is preferably added to the silicon before nitriding.

3,811,929
METALLIC CEMENTATION

Norio Kanetake, Tokyo, Japan, assignor to Kabushiki Kaisha Kito, Kawasaki-shi, Kanagawa-ken, Japan

Filed Mar. 2, 1971, Ser. No. 120,180
Claims priority, application Japan, Mar. 4, 1970, 45-17944; Mar. 5, 1970, 45-18271; Mar. 24, 1970, 45-24235
Int. Cl. C23c *11/04*
U.S. Cl. 117—107.2 R **5 Claims**



Process for cementation of iron or steel by heat treatment in a chamber with fine particles of chromium, titanium or silicon halide suspended in an inert atmosphere.

3,811,930

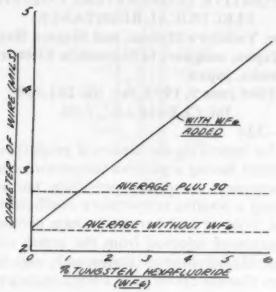
PROCESS FOR PYROLYTIC DEPOSITION OF BORON ON A METAL SUBSTRATE

Donald K. Kuehl, Manchester, Conn.; Roy Fanti, Springfield, Mass., and Salvatore F. Galasso, Manchester, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 540,091, April 4, 1966, abandoned. This application Nov. 24, 1969, Ser. No. 872,475

Int. Cl. C23c *13/02*

U.S. Cl. 117—107.2 R 3 Claims



This invention provides a process for the pyrolytic deposition of boron on a substrate comprising bringing a pyrolytically decomposable gaseous boron-containing compound and a pyrolytically decomposable metal-containing gas into contact with a substrate, including a reducing gas at an elevated temperature sufficient to pyrolytically decompose both the boron-containing compound and the metal-containing gas, whereby the boron is deposited on the substrate at a rate higher than could be obtained in the absence of the metal-containing gas.

3,811,931

METAL CONTAINER COATED WITH PHOTODEGRADABLE COMPOSITION

James Edwin Guillet, Don Mills, Ontario, Canada, assignor to Ecoplastics Limited, Thornhill, Ontario, Canada

Filed Feb. 7, 1972, Ser. No. 224,334

Claims priority, application Great Britain, Feb. 15, 1971, 4682/71

Int. Cl. B32b *15/08*; C09d *3/62*

U.S. Cl. 117—132 B 5 Claims

A disposable substrate of degradable material, such as a metal container, is provided with a photodegradable polymeric coating. The coating is water impermeable initially, but upon exposure to ultraviolet light degrades to become water permeable allowing water to contact and assist in degradation of the substrate. Suitable coatings are polymers containing side chain ketone groups, such as copolymers of vinyl monomers and vinyl ketones.

3,811,932

ANTIMICROBIAL TREATMENT OF FIBRE PRODUCTS WITH PHENYLTHIOUREAS

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basle, Switzerland

Division of Ser. No. 34,594, May 4, 1970, abandoned. This application May 8, 1972, Ser. No. 250,939

Claims priority, application Switzerland, May 7, 1969, 7008/69; July 25, 1969, 11440/69

Int. Cl. A61l *13/00*; D06m *13/40*

U.S. Cl. 117—138.5 16 Claims

β-Chlorallylthioureas as well as their derivatives obtained by adding Cl_2 or Br_2 at the chlorallyl group are effective microbicides. They may be used as active agents in detergents or for the purpose of imparting to fibrous materials antimicrobial and anti-mycotic resistance as well as for controlling plant-pathogenic bacteria and fungi.

3,811,933

OIL AND GREASE RESISTANT PAPER PRODUCTS AND PROCESS FOR TREATING CELLULOSIC MATERIALS

Melville W. Uffner, Media, and Dewey G. Holland, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 885,290, Dec. 15, 1969, abandoned. This application Dec. 1, 1971, Ser. No. 203,881

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA 17 Claims

Functional surface coating compositions, prepared by blending a mixture of a fluorine containing polymer and a non-fluorine containing material in aqueous medium, impart solvent, grease and oil resistance to cellulosic materials.

3,811,934

HEATING MEMBER

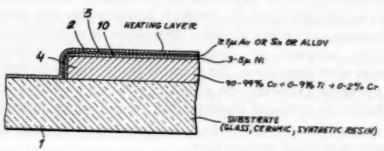
Hans-Joachim Glaser, Gelsenkirchen, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany

Filed Aug. 30, 1971, Ser. No. 176,116

Claims priority, application Germany, Sept. 9, 1970, 2044675

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 11 Claims



A heating plate comprises a generally refractory substrate of, for example, glass upon which is deposited by flame spraying, a contact member occupying a limited portion of a surface of the substrate for connecting the heating element in an electric circuit. The contact member is preferably copper or a copper-based alloy (e.g. 90 – 99 percent by weight copper, 0 – 9 percent by weight titanium and 0 – 2 percent by weight chromium). A protective metal (conductive) layer is provided on the contact member which is directly formed on the substrate and a heating element is constituted of a further conductive layer applied over the remainder of the substrate surface and on the protective layer covering the contact member.

3,811,935

ELECTROCONDUCTIVE RECORDING MEDIUM AND PROCESS OF MAKING THE SAME

Floyd T. Gould, Sudbury, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Continuation of Ser. No. 103,325, Dec. 1, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,562

Int. Cl. B44d *1/18*

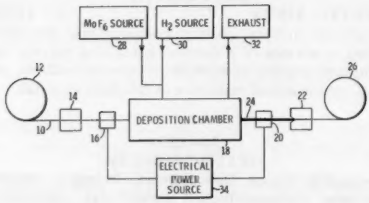
U.S. Cl. 117—215 20 Claims

A novel electroconductivity additive, potassium formate, is suspended in an aqueous solution and applied to paper during the papermaking process. The resulting impregnated paper is in one embodiment coated with a dielectric during the papermaking process thereby producing a low cost electrographic paper.

3,811,936
METHOD FOR PRODUCING REFRACTORY METAL MEMBERS BY VAPOR DEPOSITION, AND RESULTING PRODUCT

David H. Archer, Pittsburgh; Lee E. Brecher, Irwin; Joe P. Morris, Verona; Francis Talko, Irwin, and Herbert L. Taylor, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,951
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 4 Claims

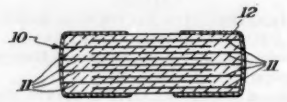


Method of preparing tungsten, molybdenum or zirconium members such as can be used in light sources wherein a metallic member has vapor-deposited thereon additional metal by a chemical vapor deposition process. For the process of fabrication of tungsten filament wire, the required dopants can also be chemically vapor deposited in the desired concentration. There is also provided the product produced by this process. The method of chemical vapor deposition of members is particularly adapted to continuous production techniques wherein after deposition, the member is mechanically reduced to its original cross-section area and wherein a portion of the mechanically reduced material has deposited thereon additional material to provide a continuous chemical vapor deposition method preparation.

3,811,937
LOW TEMPERATURE FIRED ELECTRICAL COMPONENTS AND METHOD OF MAKING SAME

Galeb H. Maher, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 91,706, Nov. 23, 1970, Pat. No. 3,682,766, which is a continuation-in-part of Ser. No. 767,046, Sept. 26, 1968, Pat. No. 3,619,220, which is a continuation-in-part of Ser. No. 626,245, March 27, 1967, abandoned. This application Dec. 9, 1971, Ser. No. 206,402
Int. Cl. B44d *1/18*; B32b *15/00*; H01g *3/07*; B32b *17/06*
U.S. Cl. 117—217 11 Claims



A low temperature fired glass-ceramic system encompassing a series of temperature compensating bodies having temperature coefficients that cover a wide range and possessing dielectric constants of from 30 to 125. This system consists of a mixture of a prefired blend of baria, titania and rare earth oxides, and a low firing glass formulation wherein the mixture is fired within the temperature range of 1,800°F to 2,100°F. A slip suspension of this mixture can be used to manufacture monolithic capacitors that utilize a relatively inexpensive palladium-silver electrode.

3,811,938
PRODUCTION OF BARIUM TITANATE CERAMICS HAVING A POSITIVE TEMPERATURE COEFFICIENT OF ELECTRICAL RESISTANCE

Namio Hirose; Yoshihiro Matsuo, and Shigeru Hayakawa, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed June 9, 1972, Ser. No. 261,330
Int. Cl. B44d *1/02*, *1/06*
U.S. Cl. 117—224 2 Claims

A process for improving the electrical properties of barium titanate ceramics having a positive temperture coefficient of electrical resistance comprises providing barium titanate ceramics having a positive temperature coefficient of electrical resistance, coating said barium titanate ceramics with at least one compound selected from the group consisting of silver compound and lithium compound; and heating the coated barium titanate ceramics at a temperature of 700°C to 1,200°C.

3,811,939
METHOD FOR THE MANUFACTURE OF HETEROGENEOUS PENETRATION COMPOUND METAL

Heinrich Hassler, Wendelstein, and Horst Schreiner, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany

Filed Dec. 28, 1971, Ser. No. 213,205
Claims priority, application Germany, Jan. 13, 1971, 2101414
Int. Cl. B44d *1/02*
U.S. Cl. 117—227 6 Claims

In a protective gas atmosphere, at least one metal of high vapor pressure (diffusion metal) is admitted as an alloying component through diffusion into the impregnating metal of lower melting point such as silver or copper contained in the pores of the frame metal, such as tungsten, rhenium or molybdenum. The diffusion temperature is chosen so that the impregnating metal exists in the liquid phase at least after the diffusion of the diffusion metals. The diffusion takes place, preferably, at 20 to 240°C above the melting temperature of the impregnating metal or the alloy formed between the impregnating metal and the diffusion metal. As the diffusion metal is used at least one of the metals bismuth, cadmium, gallium, indium, lead, tin and tellurium.

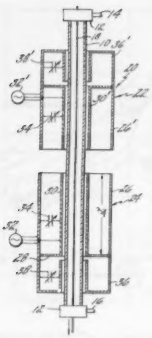
3,811,940
HIGH FREQUENCY HEATING METHOD FOR VAPOR DEPOSITION OF COATINGS ONTO FILAMENTS

Frank C. Douglas, Granby; Thomas K. Gregory, East Granby, and Robert W. Stielau, Portland, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 865,157, Oct. 9, 1969, abandoned. This application Feb. 10, 1972, Ser. No. 225,350
Int. Cl. C23c *13/04*
U.S. Cl. 117—228 9 Claims

A method for the pyrolytic deposition of a coating on a filament axially moving through a pyrolytic vapor deposition chamber comprising establishing a radio frequency electric

field to heat a selected length of the filament and cause deposition thereon and regulating the density of the electric

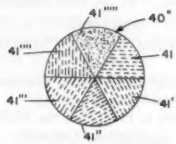


field to maintain a temperature profile of desired uniformity along the selected length.

3,811,941
ARTICLE FOR PROCESSING ELECTROMAGNETIC WAVE ENERGY

Frederic R. Morgenthaler, Wellesley Hills, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. Nos. 645,947, June 14, 1967, Pat. No. 3,530,302, and Ser. No. 740,751, June 27, 1968, Pat. No. 3,609,596. This application Aug. 23, 1971, Ser. No. 173,884
Int. Cl. H01f *10/02*
U.S. Cl. 117—234 **10 Claims**



A device for processing electromagnetic wave energy by converting the wave energy to spin waves and/or elastic waves, the present disclosure being particularly directed to the concept of providing a device made up of a single-crystal material which contains non-uniform material parameters to give graded values of material saturation $4\pi M_s$. The material discussed in greatest detail is YIG and the non-uniform material parameters are furnished by doping the YIG with gallium. The graded material parameters in combination with an external magnetic bias field H result in an internal magnetic bias field H. The electromagnetic energy as it enters the material is acted upon in a manner that is influenced greatly by the contour of H. The contour of H in the present disclosure, in turn, is predetermined to present gradations in H which will allow the conversion mentioned and which allow predetermination of the wavenumber k of the magnons and/or phonons thereby formed. Furthermore, the place or space within the crystal at which conversion occurs can be somewhat determined by the profile of H thereby provided.

3,811,942
PHOSPHORUS-MODIFIED FERROMAGNETIC CHROMIUM DIOXIDE

Philip Jackson Rennolds, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

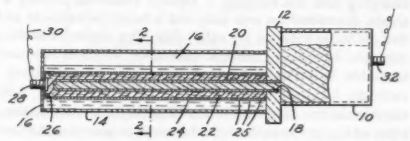
Filed Dec. 28, 1971, Ser. No. 212,988
Int. Cl. C01g *37/02*
U.S. Cl. 117—235 **10 Claims**

Ferromagnetic chromium dioxide of selected coercivity having a rutile-type tetragonal crystal structure in which a controlled amount of phosphorus is included as an integral part of the crystal structure is provided by reacting a mixture comprising at least one compound of chromium combined with oxygen having a valence other than four, phosphorus or a phosphorus-containing compound, and water at an elevated temperature.

3,811,943
MASS TRANSPORTATION ELECTRODE FOR ENERGY CONVERSION DEVICE

Robert W. Minck, Lathrup Village, and Ragnar P. Tischer, Troy, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 16, 1971, Ser. No. 115,455
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 FS **12 Claims**

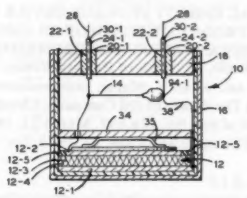


An electronically conductive perforated metal sheet contacts the exterior of a thin layer of graphite felt that has its interior in contact with the polysulfide side of the solid electrolyte in a sodium-sulfur energy conversion device. The perforated metal sheet is spaced away from the container wall to define an open space of considerable volume and is connected to an exterior terminal. Reactants and reaction products mix readily in the open space and flow easily through the perforations in the metal sheet to exchange electrons with the graphite felt.

3,811,944
ELECTRIC CELL WITH CAPACITANCE BUFFER

Charles C. Liang, Andover, Mass.; Bruce McDonald, Westcon, Conn., and William F. Vierow, Acton, Mass., assignors to R. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 12, 1973, Ser. No. 340,499
Int. Cl. H01m *43/00*
U.S. Cl. 136—6 R **10 Claims**

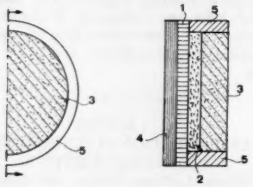


An electric cell or battery is electrically combined with a capacitor in a common case, so the capacitor can serve as a buffer for the cell or battery. The case protects both and eliminates the need for a separate case for the capacitor.

3,811,945
ELECTRIC BATTERY

Mario De Rossi, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Aug. 24, 1972, Ser. No. 283,488
Int. Cl. H01m *39/06*
U.S. Cl. 136—10 **24 Claims**



An electric battery is disclosed comprising a plurality of cells arranged in series, each cell comprising an aqueous electrolyte of zinc bromide circulated through the cells during charging and discharging, a bipolar electrode having a zinc anode deposited on one side and a bromine cathode and active cathodic mass on the other side. The active cathodic mass contains an active cathodic substance which is substantially insoluble in water and which is capable of combining with cathodic bromine to form solid addition products. Additive substances are dissolved in the electrolyte to reduce the solubility of the active cathodic substance, to increase the conductivity and acidity of the electrolyte, and to encourage the zinc to deposit in a thin and uniform layer.

3,811,946
BATTERY ELECTROLYTE COMPOSITION CONTAINING THE REACTION PRODUCT OF AN AMINE AND AN ALDEHYDE

Hans-Gerhard Creutz, Westland; Edward A. Romanowski, Troy, and Philip C. Symons, Birmingham, all of Mich., assignors to Occidental Energy Development Company, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,229
Int. Cl. H01m *43/02, 43/06*
U.S. Cl. 136—30 **2 Claims**

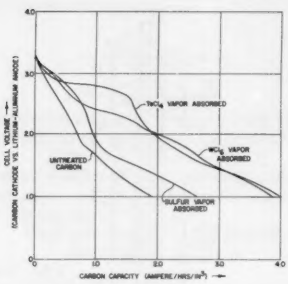
An electrolyte composition for use in an electrical storage device such as a battery, and particularly a rechargeable secondary-type battery, comprising an aqueous solution containing a metal halide and a dendrite reducing amount of a soluble reaction product of an amine and an aldehyde.

3,811,947
ELECTRICAL ENERGY STORAGE DEVICE UTILIZING AN ELECTRODE COMPOSED OF AN AMORPHOUS CARBON AND SULFUR-CARBON COMPLEX

Joseph E. Metcalfe, III, Bedford Heights; Robert A. Rightmire, Northfield, and Allan V. Marse, Independence, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 126,807, March 22, 1971, Pat. No. 3,762,954. This application Jan. 22, 1973, Ser. No. 325,389
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LF **6 Claims**

The energy storage capacity of a carbon electrode can be increased by advantageously incorporating additive elements into the electrode by the process of initially heat-treating the carbon electrode at a temperature between 700° and 1,000° C under a partial vacuum; subsequently exposing the electrode to the vapors of the desired compound under a slightly positive pressure and at a temperature below about 1,000° C; followed by cycling the electrode alternately in a charge and discharge direction in a cell containing a fused salt electrolyte composed of the halides of alkali metals or alkaline earth metals or their mixtures.



3,811,948
INORGANIC THERMAL REACTION BATTERY

James F. Bald, Jr., Jersey City, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 228,292
Int. Cl. H01m *21/14*
U.S. Cl. 136—83 T **6 Claims**

A thermally activated electrical storage device including a non-conducting solid material capable of being thermally decomposed or pyrolyzed to form a liquid conductive electrolyte in combination with a means for heating the non-conducting solid material to at least its thermal decomposition or pyrolytic temperature, and is useful in the field of ordnance projectiles, missiles and the like.

3,811,949
HYDRAZINE FUEL CELL AND METHOD OF OPERATING SAME

Margarete Jung, Kelkheim/Taunus, Germany, assignor to Varta A.G., Frankfurt/Main, Germany

Filed July 1, 1970, Ser. No. 51,544
Claims priority, application Germany, July 3, 1969, 1933778
Int. Cl. H01m *27/04*
U.S. Cl. 136—86 D **6 Claims**

An amalgamated metal, like nickel, iron or cobalt to use hydrazine electrochemically, or mixtures and alloys, an electrode, a fuel cell and battery, and methods of using same.

3,811,950
BIOCHEMICAL FUEL CELL AND METHOD OF OPERATING SAME

Dominic C. Avampato, 241 Quinnipiac Ave., New Haven, Conn.; Robert N. Dibella, 8 Stevens Ln., Glastonbury, Conn., and Roger E. Vasas, 120 Retreat Ave., Hartford, Conn.

Filed Jan. 26, 1972, Ser. No. 220,901
Int. Cl. H01m *31/00, 27/30*
U.S. Cl. 136—86 E **13 Claims**

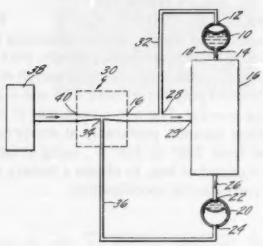
A chemical fuel cell is presented wherein electrical energy is generated by the reaction of enzymes, substrates and nucleotides, the reaction being, in part, similar to parts of the tricarboxylic acid cycle in the human body.

3,811,951

VENTURI TUBE REGULATOR FOR A FUEL CELL

James K. Stedman, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 9, 1972, Ser. No. 261,210
Int. Cl. H01m 27/12
U.S. Cl. 136—86 B 2 Claims



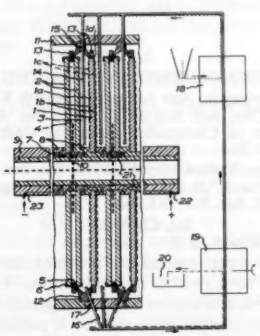
Hydrogen is provided at constant pressure to a fuel cell through a Venturi tube. A highly concentrated solution of electrolyte is introduced into the cell from one bladder valve and diluted electrolyte is removed from the cell to a second bladder valve in proportion to the reduction of pressure at the throat of the Venturi tube.

3,811,952

METHOD AND APPARATUS FOR SUPPLYING ENTIRELY OR SUBSTANTIALLY ENTIRELY CONSUMABLE METALLIC MATERIAL TO A MAGNETIC ELECTRODE IN A METAL/OXYGEN OR METAL/AIR CELL

Olle Lennart Siwersson, and Karl Gunnar Tell, both of Helsingborg, Sweden, assignors to AB St. Powercell, Helsingborg, Sweden

Continuation of Ser. No. 185,943, Oct. 4, 1971, abandoned. This application June 20, 1973, Ser. No. 371,618
Claims priority, application Sweden, Oct. 8, 1970, 13627/70
Int. Cl. H01m 27/00
U.S. Cl. 136—86 A 11 Claims



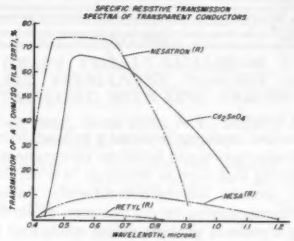
A method and apparatus for supplying substantially entirely consumable metallic material to a magnetic electrode in a metal/oxygen cell which also includes an oxidizing agent electrode and an electrolyte, comprises supplying the metallic material in the form of particles having ferromagnetic properties and in such proximity to the magnetic electrode that the particles are attracted by and retained to it.

3,811,953

LIGHT-TRANSMITTING ELECTRICALLY CONDUCTING CADMIUM STANNATE AND METHODS OF PRODUCING SAME

Arthur Jack Nozik, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 20, 1971, Ser. No. 181,916
Int. Cl. C01g 11/00; B01k 1/00; H01l 15/02
U.S. Cl. 136—89 21 Claims



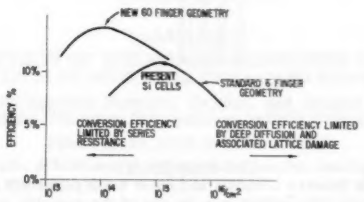
Cadmium stannate (Cd_2SnO_4) is shown to provide a light-transmitting electrically conducting composition in which the electrical conductivity can be varied from 10^{-7} ohm^{-1}cm^{-1} to 10^4 ohm^{-1}cm^{-1} by controlling the oxygen vacancy concentration of the material. Amorphous and crystalline films of Cd_2SnO_4 can be disposed on cold and/or hot substrates and they exhibit high optical transparency as well as high electrical conductivity. Other useful forms and configurations of semiconducting Cd_2SnO_4 are disclosed.

3,811,954

FINE GEOMETRY SOLAR CELL

Joseph Lindmayer, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sept. 28, 1971, Ser. No. 184,393
Int. Cl. H01l 15/02
U.S. Cl. 136—89 18 Claims



A fine geometry solar cell having a top surface contact comprising substantially more and finer metallic fingers spaced close together for collecting photocurrent. Junction depth and/or impurity concentration may be reduced significantly. The method for making the fine geometry solar cell, comprises in ordered steps, the processes of diffusion, oxidation, photolithography, metallization and plating.

3,811,955

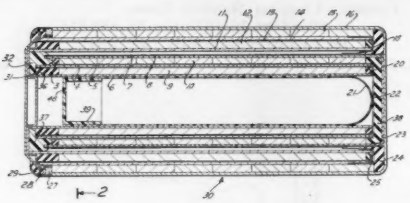
HIGH DISCHARGE RATE MERCURY CELL

Robert E. Ralston, Spring Valley, and Yung Ling Ko, Peekskill, both of N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 777,773, Nov. 21, 1968, abandoned. This application Aug. 7, 1972, Ser. No. 279,107

Int. Cl. H01m *21/00*

U.S. Cl. 136—107 2 Claims



The present invention provides a primary battery for high current loads. In order to fulfill the electrochemical parameters for giving high current discharge, it is necessary that the electrode area be increased extensively. Provision is thus made for compensating for gas evolution within the battery by including a pressure gradient device within said battery. This device is incorporated within a large void space within the battery and comprises an electrolyte dispenser in combination with a flexible, unperforated tube having a sealed end and an open end. The open end is closed by means of an electrolyte dispenser comprising a tight-fitting plastic cap having an aperture therethrough. This pressure gradient device is disposed concentrically within the cell, generally within one of the inner conductors of the cell, such as the anode conductor.

3,811,956

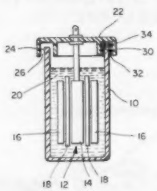
SEALANT FOR GALVANIC BATTERIES AND CELLS

Donald G. Reinert, Emmaus, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 2, 1972, Ser. No. 303,018

Int. Cl. H01m *1/02*

U.S. Cl. 136—133 8 Claims



A galvanic cell and battery sealant is described in which the sealant between container and cover has a permanent foam structure. The sealant may be any of the available sealant materials known to the art, having the properties of adherence, foamability, permanence and inertness to the battery electrolyte. The foamed sealant is equally suitable for batteries closed by sealant alone without a cover. Typical sealant materials are foamed epoxy, foamed phenolic, foamed furan and foamed polyester. The density of the foamed material may be chosen to be between 2 and 50 lbs. per cubic ft. A method for sealing galvanic batteries and cells also form a part of the invention. The foam sealant is readily removeable for battery repair.

3,811,957

BATTERY SEPARATORS MADE FROM POLYMERIC FIBERS

Robert R. Buntin, Baytown, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 843,839, July 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 787,258, Dec. 26, 1968, abandoned. This application June 29, 1972, Ser. No. 267,325

Int. Cl. H01m *3/00*

U.S. Cl. 136—146 17 Claims

A battery separator and the process for preparing it, having excellent abrasion resistance, stiffness, porosity, pore size, and electrical resistance is produced from a non-woven mat of randomly laid, self-bonded polymeric fibers. The mat is produced by a melt-blowing process. The non-woven mat is then compacted, in a critical manner, preferably at temperatures for polypropylene of from 290° to 310° F., using relatively low pressures, i.e., 10 psi/in² or less, to obtain a battery separator meeting precise and essential specifications.

3,811,958

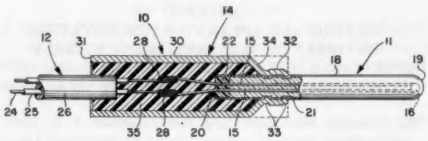
MECHANICALLY FASTENED TRANSITION FITTING

James Herbert Maurer, McHenry, Ill., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Feb. 24, 1972, Ser. No. 227,782

Int. Cl. H01v *1/02*

U.S. Cl. 136—233 9 Claims



A thermocouple assembly in which the sensing element is encased in a metallic sheath and joined to extension wires within a tubular transition fitting which is swaged to the sheath and which may be filled with encapsulation material.

3,811,959

CORROSION RESISTANT COATING SYSTEM

Martin Weinstein, San Antonio, Kenneth K. Speirs, Universal City, and Robert B. Baer, San Antonio, Tex., assignors to Chromalloy American Corporation, New York, N.Y.

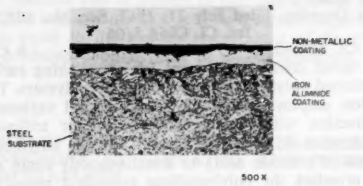
Original application May 17, 1971, Ser. No. 143,842, now Patent No. 3,729,295. Divided and this application Aug. 24, 1972, Ser. No. 283,380

Int. Cl. B32b *15/18*

U.S. Cl. 148—6.15 R 11 Claims

Ferrous metal articles are provided having improved resistance to corrosion in highly saline and/or marine atmospheres, the articles being characterized by a protective duplex coating comprised of a sacrificial thermally aluminized ferrous metal surface in a combination with a special barrier type non-metallic overcoat. One method of providing the foregoing system is to apply an adherent layer from a liquid of a soluble silicate salt or compound onto a thermally aluminized layer, the silicate layer be-

ing preferably thereafter cured. In a preferred embodiment, a conversion coating is applied to the silicate layer



and cured *in situ* to further enhance the resistance to corrosion.

3,811,960

PROCESS OF PRODUCING NICKEL CHROMIUM ALLOY PRODUCTS

Philip James Parry, Birmingham, and Peter Lindsay Twigg, Worcs, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Jan. 11, 1973, Ser. No. 322,610
Claims priority, application Great Britain, Jan. 17, 1972, 2,170/72

Int. Cl. C22f *1/10, 1/11*
U.S. Cl. 148—11.5 F **6 Claims**

Wrought corrosion-resistant nickel-chromium alloy products having high strength and ductility at elevated temperatures are produced by hot-working a two-phase nickel-chromium alloy containing, by weight, from 47 to 65% chromium, from 0 to 12% cobalt, from 0.02 to 0.1% carbon, from 0 to 0.01% boron, one or more of titanium, aluminum, molybdenum, tungsten, tantalum and niobium in amounts in the ranges from 1 to 6% titanium, from 0.5 to 5% aluminum, from 1 to 10% molybdenum, from 2 to 10% tungsten, from 2 to 10% tantalum and from 0.5 to 10% niobium, and such that

$$3\times(\text{percent Ti})+3\times(\text{percent Al})+5\times(\text{percent Mo})+2.5\times(\text{percent W})+2.5\times(\text{percent Ta})+5\times(\text{percent Nb})-12\geqslant 0$$

with the provisos that

(i) the sum of the aluminum and titanium contents does not exceed 6%;
(ii) the sum of the aluminum, titanium, niobium and tantalum contents does not exceed 15%; and
(iii) the sum of the tungsten and molybdenum contents does not exceed 10%

and one or more of zirconium, cerium, yttrium and hafnium in a total amount exceeding that required to combine with all the nitrogen present and sufficient to form a eutectic with the nickel, but not exceeding 4%, the balance, except for impurities including nitrogen in an amount not exceeding 0.1%, being nickel in an amount of at least 25%, to break down its cast structure and then solution-heating it at a temperature within the range of 50° C. below its solidus temperature for from ½ to 20 hours.

3,811,961

BORIDIZED STEEL-BONDED CARBIDES

Martin Weinstein, San Antonio, Tex., Subhash C. Singhal, Monroeville, Pa., and John L. Ellis, White Plains, N.Y., assignors to Chromalloy American Corporation, San Antonio, Tex.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,282
Int. Cl. B23p *3/00*
U.S. Cl. 148—34 **2 Claims**

A surface-hardened cemented carbide shape is provided consisting essentially of primary grains of a refractory metal carbide distributed through a metal matrix, the metal matrix adjacent the surface between the carbide grains having a boridized layer characterized metallographically by the presence of an iron-group metal boride.

3,811,962

LARGE GRAIN COBALT-SAMARIUM INTERMETALLIC PERMANENT MAGNET MATERIAL STABILIZED WITH ZINC AND PROCESS

Mark G. Benz, Burnt Hills, N.Y., assignor to General Electric Company

Filed Apr. 17, 1972, Ser. No. 244,423
Int. Cl. H01f *1/02*
U.S. Cl. 148—103 **13 Claims**

An alloy of cobalt and samarium is cast to produce a cast body having grains ranging in size from about 100 microns to 1000 microns. The cast body is annealed in an atmosphere in which it is substantially inert at a temperature ranging from about 900° C. up to a temperature below its melting point for a period of time ranging from about 5 minutes to 24 hours. To get significantly useful permanent magnet properties, it should be annealed at a particular annealing temperature for a period of time sufficient for the resulting free grains to show at room temperature, after being magnetized to at least approach saturation magnetization, a relative magnetization value of $4\pi J/B_r$ of at least 50 percent at a demagnetizing field of −4 kilooersteds with relative magnetization $4\pi J/B_r$, by definition, being 1.00 at zero demagnetizing field. The annealed body is then comminuted to a grain size corresponding to or smaller than the grain size of the cast body and ranging from about 50 microns to 200 microns. The free annealed grains are admixed with 1–15% by weight zinc powder and the resulting mixture is heated to melt the zinc powder to form a continuous coating of zinc on the individual grains.

3,811,963

METHOD OF EPITAXIALLY DEPOSITING GALLIUM NITRIDE FROM THE LIQUID PHASE

Frank Zygmunt Hawrylo, Trenton, and Jacques Isaac Pankove, Princeton, N.J., assignors to RCA Corporation

Filed Feb. 20, 1973, Ser. No. 333,528
Int. Cl. H01l *7/38*
U.S. Cl. 148—172 **7 Claims**

An epitaxial layer of gallium nitride is deposited from a melt containing a small concentration of gallium and a large concentration of a metal or mixture of metals which do not form a stable compound with nitrogen. The melt is subjected to an atmosphere containing nitrogen so as to form gallium nitride in the melt. A substrate is brought into contact with the gallium nitride containing melt and the melt is cooled to deposit gallium nitride from the melt onto the substrate. The substrate is then separated from the melt.

3,811,964

SOLID PROPELLANT WITH NON-METALLIC BURNING RATE CATALYSTS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 11, 1968, Ser. No. 783,155
Int. Cl. C06d 5/06
U.S. Cl. 149—19.1 6 Claims

A new group of burning rate catalysts used in solid composite propellant compositions. These catalysts are non-metallic high molecular weight aldehydes or ketones preferably having at least eight carbon atoms per molecule, or non-metallic substituted phenols. Typical compounds of this type of catalyst are octadecenylaldehyde, *beta* - methylumbelliferone, 3,3,5 - trimethylhexaldehyde, *normal* - decylaldehyde, *para* - hydroxypropiophenone, 2-ethylhexaldehyde, octadecyl aldehyde, 8-heptadecylketone, pentachlorophenol, and *para*-hydroxybenzaldehyde.

3,811,965

PROPELLANTS CONTAINING COMBINATION BURNING RATE SYNERGIST AND CURING AGENT OF EPOXYALIPHATIC CARBORANE

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 6, 1967, Ser. No. 667,049
Int. Cl. C06d 5/06
U.S. Cl. 149—19.2 10 Claims

A novel curing (chainextender) agent for carboxylated polybutadiene and acrylate binders which also functions as a burning rate synergist for use in composite propellant compositions. Specifically, the use of 1-(2,3-epoxyaliphatic)carboranes such as 1-(2,3-epoxybutyl)carborane and 1,2-bis(2,3-epoxyaliphatic)carboranes such as 1,2-bis (2,3-epoxypropylcarborane as novel curing agents for use in composite propellant compositions is disclosed. The aliphatic group should have at least 3 carbon atoms in the chain.

3,811,966

COMPOSITE MODIFIED DOUBLE-BASE PROPELLANTS WITH VERY HIGH BURNING RATES

William E. Hill and Lew R. Beason, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed June 24, 1969, Ser. No. 836,177
Int. Cl. C06d 5/06
U.S. Cl. 149—19.2 5 Claims

Composite modified double-base propellants with very high burning rates result when 11-isopropenyl, 12-prop-(2-one)-yl-carborane

(IPCA), a liquid ketone derivative of isopropenylcarborane, is employed as the burning rate catalyst for the propellant composition.

3,811,967

HIGHLY LOADED CAST POLYURETHANE PROPELLANTS CONTAINING ALUMINUM

Charles J. Strickler, Carmichael, and Aubrey J. Hammond, Sacramento, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 20, 1966, Ser. No. 588,692
Int. Cl. C06d 5/06
U.S. Cl. 149—19.4 2 Claims

A castable solid rocket propellant having increased solids-to-binder ratio for use in volume limited missile systems.

3,811,968

POLYMERIZATION CROSSLINKING AGENT FOR POLYBUTADIENE PROPELLANT PREPOLYMERS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 21, 1967, Ser. No. 655,737
Int. Cl. C06d 5/06
U.S. Cl. 149—19.9 9 Claims

A novel crosslinking agent for crosslinking carboxyl-terminated polybutadiene propellant prepolymers. The invention employs *tert*-butylperoxyisopropyl carbonate in conjunction with various difunctional or trifunctional aziridinyl chain extension agents (e.g., the butyleneimine adduct of trimesic acid) to simultaneously chain extend and crosslink the polybutadiene propellant prepolymers. The elastomer product is useful as a binder for solid propellants.

3,811,969

FUSE POWDER COMPOSITION

Yves Bertrand and Robert Grebert, Saint-Medard-en-Jalles, France, assignors to Etat Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Paris, France

Filed Mar. 7, 1972, Ser. No. 232,493
Claims priority, application France, Mar. 8, 1971, 7107863
Int. Cl. C06b 11/00
U.S. Cl. 149—20 5 Claims

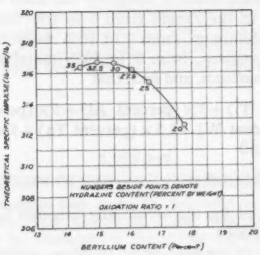
Novel fuse powder compositions which burn very rapidly without decomposition comprise zirconium, barium chromate, ammonium perchlorate, and ammonium dichromate.

3,811,970

GELLED HYDRAZINE PROPELLANT COMPOSITIONS CONTAINING HYDRAZINE NITRATE AND A FINELY DIVIDED METAL

Charles B. Henderson, Alexandria, Va., assignor to Atlantic Research Corporation, Fairfax County, Va.

Filed Nov. 9, 1964, Ser. No. 410,022
Int. Cl. C06d 5/06, 5/10
U.S. Cl. 149—36 9 Claims



1. A heterogeneous propellant composition consisting essentially of hydrazine; hydrazine nitrate; finely-divided metallic fuel selected from the group consisting of beryllium, aluminum, magnesium, zirconium, hafnium, alloys of the aforesaid metals, hydrides of the aforesaid metals, and mixtures thereof; and a gelling agent capable of maintaining a stable hydrazine gel structure in the presence of hydrazine nitrate, said composition having an oxidation ratio of about .94 to about 1.50 as defined by the formula:

$$\text{Oxidation ratio} = \frac{O}{C + M\left(\frac{v}{2}\right)}$$

wherein O equals the total amount of oxygen in said composition; C equals the total amount of carbon; M equals the total amount of metal; and v equals the valence of the metal, said O, C, and M being expressed in terms of the number of atomic equivalents, and wherein said metallic fuel is present in said composition in an amount at least sufficient to provide a flame temperature at least equal to the melting temperature of the metal oxide produced upon burning of said composition.

3,811,971

METHOD OF BLASTING UNDER HIGH PRESSURE CONDITIONS AT ELEVATED AND NORMAL TEMPERATURES

Melvin Alonzo Cook, Albert G. Funk, and Gary L. Hansen, Salt Lake City, Utah, assignors to Ireco Chemicals

No Drawing. Continuation of abandoned application Ser. No. 157,660, June 28, 1971. This application July 5, 1973, Ser. No. 376,286

Int. Cl. C06b *15/02*

U.S. Cl. 149—92 **7 Claims**

A method of blasting in deep wells, where explosive compositions are subject to high ambient pressures and temperatures ranging from normal to as high as 300° F., includes preparing a fluid explosive composition comprising a blend of polynitrated aromatic hydrocarbon of normally solid high explosive type such as trinitrotoluene at least partially dissolved in a liquid nitrated aromatic hydrocarbon such as nitrobenzene, mononitrotoluene and dinitrotoluene and mixture of these. The composition is prepared at a temperature high enough to render it pumpable due to sufficient dissolution of the high explosive polynitrated hydrocarbon in the liquid hydrocarbon. While the composition remains fluid, it is pumped into the deep well or borehole.

3,811,972

PROCESS FOR MAKING A LITHIUM DOPED BERYLLIUM HYDRIDE COMPOSITE

Leonard M. Niebylski, Birmingham, Mich., and Gottfried J. Brendel, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed June 2, 1969, Ser. No. 830,222

Int. Cl. C06b *15/00*

U.S. Cl. 149—109 **22 Claims**

Lithium-doped amorphous beryllium hydride slurried with relatively small amounts of an inert liquid slurry medium can be crystallized by exposure for a sufficient time to elevated temperature and pressure. Suitable solvents are high-boiling hydrocarbons. A vitreous composite suitable for use in this crystallization process can be prepared by compressing lithium-doped, amorphous beryllium hydride and heating the resulting compact.

3,811,973

TECHNIQUE FOR THE FABRICATION OF A BI-LEVEL THIN FILM INTEGRATED CIRCUIT

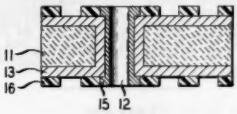
Nathan George Lesh, Bethlehem, Pa., and Peter Joseph O'Day, Spring Lake, and Burton Abram Unger, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 11, 1972, Ser. No. 280,055

Int. Cl. C23f *1/02*

U.S. Cl. 156—3 **5 Claims**

Bilevel thin film circuits having gold metallized through holes require protection from attack by gold conductor etchants. A novel procedure for effecting this end involves plating an etch stop such as rhodium or platinum upon the walls of the through holes and around the entrance and exit ports. Since rhodium plating is normally required in the fabrication of such circuits for



solderable components, the through hole protection and rhodium plating may be performed simultaneously.

3,811,974

SILICON NITRIDE-SILICON OXIDE ETCHANT

Anthony S. Squillace, Cypress, Albert E. Martin, Lynwood, and Jerald J. Rudmann, Anaheim, Calif., assignors to North American Rockwell Corporation

Filed July 19, 1971, Ser. No. 163,630

Int. Cl. H01l *7/50*

U.S. Cl. 156—8 **5 Claims**

This invention discloses a chemical etchant and a process for chemically etching silicon nitride-silicon oxide composite structures which may be used, for example in microelectronic devices. The etching process or system utilizes a mixture of phosphoric acid and a fluoborate anion containing compound such as fluoboric acid. The etch rate of the silicon nitride relative to the etch rate of the silicon oxide can be controlled to the desired etch rate by varying the temperature of the etchant and/or adjusting the ratio mixture of the phosphoric acid and the fluoboric acid.

3,811,975

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE AND DEVICE MANUFACTURED BY THE METHOD

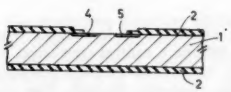
Joseph Gijsbertus van Lierop, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,706

Claims priority, application Netherlands, Jan. 8, 1971, 7100275

Int. Cl. H01l *7/50*

U.S. Cl. 156—13 **7 Claims**



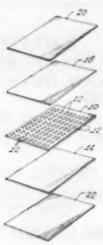
A method of gettering a semiconductor device having an insulating layer of which at least a part must not be covered with a gettering material, for example with phos-

phorsilicate glass, at the gettering temperature. According to the invention, the gettering material is provided on the whole semiconductor body and on the insulating layer at such a low temperature that substantially no gettering occurs, and the gettering material is then removed from at least a part of the insulating layer, after which the gettering step is carried out as the last treatment carried out at high temperature. Application in particular in gettering MOS transistors.

3,811,976
METHOD FOR MANUFACTURING POROUS METAL FIBER FELTS
Josef Schlömer, Sinsheim, and Georg Hof, Kuchen, Germany, assignors to Wurttembergische Metallwerke, Geislingen an der Steige, Germany
No Drawing. Filed May 30, 1972, Ser. No. 257,894
Int. Cl. B32b *5/16, 15/00*
U.S. Cl. 156—62.8 **6 Claims**

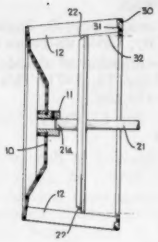
A method is described for manufacturing porous metal fiber materials of uniform constitution by screening comminuted metal fibers on to a carrier support and thereby distributing the comminuted metal fibers using a rotary movement and the one or more layers distributed on to a support are then coated with an adhesive or binding agent applied to this first layer, whereupon one or more subsequent fiber layers are applied and these processes are continued until the desired thickness of the resultant mat on the support has been obtained, whereupon the mat so formed is then dried and the solvent present in the adhesive or binding agent is driven off, and then the products are subjected to heat treatment if required after compacting. Very uniform distribution is achieved if the comminuted metal fibers are distributed using a rotary movement and subsequent vibratory treatment, and the comminuted metal fibers may be classified before the distribution step, for purpose of more reliable control of the desired properties of the material to be produced.

3,811,977
STRUCTURE AND METHOD OF MAKING MAGNETIC CARDS
David C. Kramer, Redondo Beach, Calif., assignor to Rusco Industries, Inc., Los Angeles, Calif.
Filed Apr. 17, 1972, Ser. No. 244,488
Int. Cl. B32b *31/00;* **G11b** *5/80*
U.S. Cl. 156—108 **1 Claim**



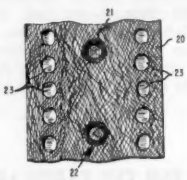
A single plastic sheet is formed from a number of sheets that include a central core sheet having a plurality of windows, in each of which is a strip of magnetic material of the thickness thereof. The core sheet is first tacked to an opaque sheet, upon which the magnetic strips are laid when placed in the windows. Then a second opaque sheet is placed over the core sheet, and clear sheets on which desired information is printed are placed on the opaque sheets. All the sheets are fused into a single sheet with the strips embedded therein, and is then cut into individual cards having respective strips at the same locations thereinto facilitate encoding and acceptance in an appropriate reader.

3,811,978
METHOD OF FORMING CENTRIFUGAL BLOWER WHEEL
John A. Wooden, Indianapolis, Ind., assignor to Brookside Corporation, McCordsville, Ind.
Filed Aug. 21, 1972, Ser. No. 282,336
Int. Cl. B32b *31/00*
U.S. Cl. 156—160 **2 Claims**



Disclosed is a centrifugal blower wheel including an end plate and blades extending from it. The wheel is given a conical configuration by inserting a tool having a circular periphery into the cylindrical space defined by the inner side margins of the blades. The tool is moved toward the end plate, forcing the blades to flare outwardly and placing them under bending stress. This blade stress tends to be relieved by centrifugal force acting on the blades during operating rotation of the wheel.

3,811,979
PEG-ROLL SOFTENING OF FIBRILLATED SHEET
James Joseph Dempsey, Richmond, Va., and Drexel Kermit Smith, Hendersonville, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 16, 1970, Ser. No. 98,676
Int. Cl. D04h *3/00*
U.S. Cl. 156—181 **3 Claims**



A nonwoven sheet of fibrillated organic polymer material is softened by passage through the nip formed between two parallel rolls each bearing a multiplicity of square-ended pegs, the locus of the ends of all pegs on each roll lying on a cylinder whose axis coincides with the roll axis, the said rolls being engaged such that an array of pegs of one roll interpenetrates an array of pegs on the opposite roll by an amount that is at least equal to the thickness of the nonwoven sheet.

3,811,980

PROCESS FOR MIXED SOLVENT PRIMING AND CEMENTING OF PRESSURE PIPES OF POLYVINYL CHLORIDE

Bernhard Roderhoff, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed May 3, 1972, Ser. No. 250,036

Claims priority, application Germany, May 26, 1971, P 21 26 081.1

Int. Cl. C09j 5/02; F16l 13/10

U.S. Cl. 156—308 2 Claims

In the process for the cementing of polyvinyl chloride pipes, which comprises the steps of applying a coating consisting of polyvinyl chloride dissolved in a solvent to the pipe surfaces to be cemented, joining the coated pipe surfaces to each other, and drying off the solvent; the improvement which comprises treating the surfaces to be cemented, prior to their actually being coated with said coating, with a mixture consisting essentially of (a) 90 parts by volume of butanone, (b) 3 to 20 parts by volume of cyclohexanone and (c) 0 to 3 parts by volume of tetrahydrofuran.

3,811,981

PROCESS FOR GLUING PAPER

Andre Guillaume, Lyon, and Charles Schneider, Vernaison, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 58,150, July 24, 1970. This application Apr. 5, 1972, Ser. No. 241,468

Claims priority, application France, July 28, 1969, 6925746

Int. Cl. C09j 3/14; B32b 27/10, 27/28

U.S. Cl. 156—332 5 Claims

Paper is advantageously bonded by the melt adhesive technique with a terpolymer of a vinyl ester of a lower aliphatic acid, e.g. vinyl acetate, an unsaturated acid, e.g. crotonic acid, and a vinyl ester of a higher aliphatic acid.

3,811,982

APPARATUS FOR MANUFACTURING LARGE, BONDED PANEL ELEMENTS SUCH AS WALL ELEMENTS FOR HOUSING CONSTRUCTION

Karl Olav Jacobsen, 2 Ovre Fjellvei, 2010 Strommen, Norway

Filed June 20, 1972, Ser. No. 264,664

Claims priority, application Norway, June 22, 1971, 2,365/71

Int. Cl. B32b 31/04

U.S. Cl. 156—382 9 Claims

An apparatus for manufacturing large, bonded panel elements is disclosed, consisting of a box having a movable top and bottom sealed around the edges against the box wall. The bottom is movably supported by jack means. The elements to be bonded are placed in the box and the interior of the box is put under vacuum, whereby the top is pressed towards the elements, thereby exerting a pressure on the faces to be bonded together.

3,811,983

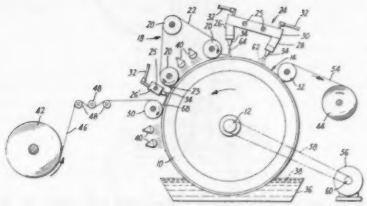
METHOD FOR PRODUCING RETROREFLECTIVE SHEETING

William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.

Filed June 23, 1972, Ser. No. 265,736

Int. Cl. B29d 7/08; G02b 5/12

U.S. Cl. 156—245 8 Claims



Retroreflective sheeting is produced by bonding a multiplicity of cube corner formations to sheet material. Cube corner formations are produced on a mold having a surface in which is formed an array of minute, contiguous cube corner recesses. Shrinkage of the resin formulation initially deposited in the recesses causes depressions in the base portions of the cube corner formations; the depressions are filled with a bonding material which serves not only to level the cube corner formations, but also to bond them to the sheet material. The apparatus utilized is a continuously moving mold surface and has a plurality of stations for effecting the several steps of the process.

3,811,984

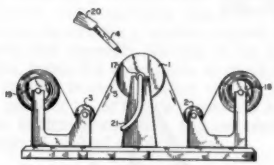
METHOD FOR PREPARING TUBULAR THERMOPLASTIC FILAMENTS

Paul Joonase, 23 E. Earle St., Greenville, S.C. 29609

Original application Apr. 3, 1970, Ser. No. 29,381, now abandoned. Divided and this application Dec. 16, 1971, Ser. No. 209,002

Int. Cl. B32b 31/00

U.S. Cl. 156—251 5 Claims

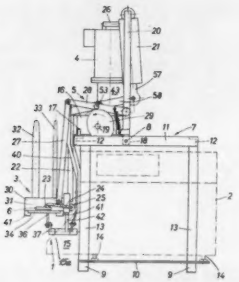


According to the invention, superior filaments having beaded edges and which are suitable for twisting and weaving are prepared from thermoplastic film by severing the film with flame as it is selectively cooled while passing over a cooled, grooved roll. Alternately, the film may be cooled and the flame selectively applied as with a gas flame fitted with a slitted heat shield. By using a double wound film, tubular filaments are prepared when the film is heat severed and the edges of two or more filaments fuse together.

3,811,985
METHOD FOR MAKING PRICE SHIELDS OR THE LIKE

Max Lehner-Stirnemann, Hauptstrasse 1001, CH-5722, Granichen, Switzerland

Filed Jan. 27, 1971, Ser. No. 110,159
Claims priority, application Switzerland, Feb. 2, 1970, 1,451/70
Int. Cl. B65c *9/14, 9/20, 11/02*
U.S. Cl. 156—277 4 Claims

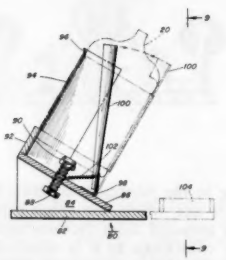


There is disclosed a method and apparatus for fabricating price shields or the like which consist of a price tag or label printed by a balance or weighing device and a label support or carrier, which is manifested by the features that individual label carriers are brought into the region of a price label-delivery location and at such location retained in a holder until a price label has been printed out by the balance or weighing device and delivered to this delivery location. Thereafter the label support or carrier and the price label itself are guided towards one another and by being pressed against one another united, and the thus formed price shield is then ejected.

3,811,986
BAND LABEL APPLYING AND CONTAINER POSITIONING APPARATUS

Peter D. Mare, 23 Fox Hill, Upper Saddle River, N.J. 07458, and Albert L. Ross, 11 Bonaire Drive, Suffolk, N.Y. 11746

Continuation-in-part of abandoned application Ser. No. 105,840, Jan. 12, 1971. This application May 26, 1971, Ser. No. 147,029
Int. Cl. B32b *31/04;* B65b *13/02*
U.S. Cl. 156—494 4 Claims

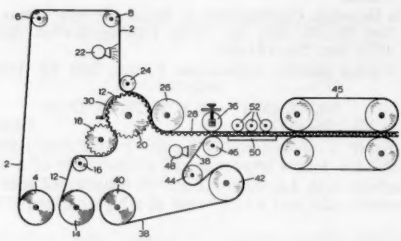


A label applying and container positioning apparatus is shown wherein blow-molded containers or bottles may be readily guided into a slightly stretched band label made of a relatively thin film strip. After the label is positioned on the container, the label is released so as to grip the sidewall of the container after which the labeled container is slid from the positioning apparatus with the label snugly in its desired mounted condition on the container. Three embodiments of the invention are shown. In a first embodiment, round or elliptical bottles are labeled with the apparatus usually in a vertical condition. In a second embodiment, square or rectangular bottles are labeled also with the apparatus usually in a vertical condition. In a third embodiment, the container positioning apparatus is disposed at an angle such as thirty degrees from the vertical and a spring-biased label stretching guide or tongue directs and assists in the entry of the bottle into the label applying apparatus.

3,811,987
APPARATUS FOR BONDING THERMOPLASTIC MATERIALS AND PRODUCTS THEREOF

Michael C. Wilkinson, St. Louis, Mo., and Leo Blais, Shawinigan, Quebec, and Wilhelm N. Martin and Silvano Tesainer, Grand'Mere, Quebec, Canada, assignors to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas

Original application Apr. 28, 1969, Ser. No. 819,752, now abandoned. Divided and this application Feb. 22, 1972, Ser. No. 227,959
Claims priority, application Canada, Feb. 24, 1969, 43,756
Int. Cl. B31f *1/00*
U.S. Cl. 156—497 3 Claims



This invention relates to the bonding of thermoplastic material, and more particularly to apparatus for forming corrugated paperboard by firstly applying a coating or film of thermoplastic material to the surfaces to be bonded and then heating the thermoplastic material by the direct application of an open flame to the thermoplastic surface. The open flame heats a surface layer of the thermoplastic material to render it bondable with the other element of the laminate. The disclosure also relates to an apparatus including means for supplying, corrugating and bonding coated paper to form corrugated paperboard, and to apparatus for uniting the paper and holding it together while the bonds cool and harden.

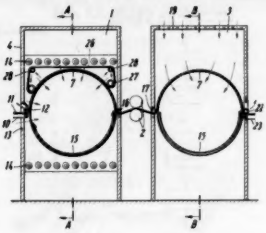
3,811,988
APPARATUS FOR CONTINUOUS BONDING OF FELT MATERIALS BY SEQUENTIAL HEATING AND COOLING OPERATIONS

Heinz Fleissner, Egelsbach, near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Application Feb. 14, 1969, Ser. No. 799,479, now Patent No. 3,616,031, which is a continuation-in-part of application Ser. No. 642,496, May 31, 1967, now Patent No. 3,619,322. Divided and this application Nov. 6, 1970, Ser. No. 87,606
Claims priority, application Germany, Feb. 14, 1968, P 16 60 795.7
Int. Cl. B32b *31/20;* F26b *3/10, 11/02*
U.S. Cl. 156—498 28 Claims

The present disclosure relates to a process and apparatus for bonding felts or felt-like materials which com-

prises adding to the materials to be bonded a synthetic bonding fiber thereby forming a fiber blend and fuse-bonding the fiber blend by heat-treating said blend to the sticking or melting point of the bonding fibers and setting the fiber blend by cooling down the bonded fibers, said heat-treatment and cooling down stages being effected



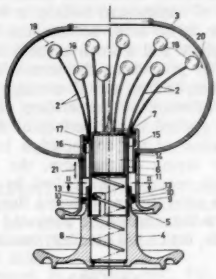
shock-like by passing at least part of the heating and cooling treatment medium through the material being treated. The present disclosure is particularly directed to the use of steam during the treatment process as well as to the application of pressure to the fiber blend while said blend is in a heated state.

3,811,989
DECORATIVE TRIM STRIPS
Robert Renner Hearn, Woking, England, assignor to Creators Limited, Surrey, England
Filed May 15, 1972, Ser. No. 253,406
Int. Cl. B32b *3/02, 15/08, 31/30*
U.S. Cl. 161—5 **3 Claims**

This invention relates to decorative trim strips having a surface displaying a metallized finish and which comprise a substrate extruded of a heat-resistant plastics material to the front face of which is bonded a metal or metallized strip to provide the metallized finish. A protective layer of clear plastics material may cover the metal or metallized strip. The invention also provides processes of making these strips.

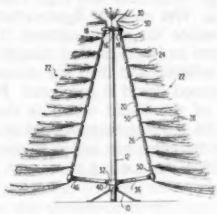
3,811,990
THERMALLY ACTUATED MOBILE
Werner Stoff, Cologne, Germany, assignor to Ge-Na-Geschenke Gebr. Nagel KG, Wesseling, Germany
Filed Oct. 18, 1972, Ser. No. 298,787
Claims priority, application Germany, Apr. 1, 1972, G 72 12 519.0
Int. Cl. A47g *33/08*
U.S. Cl. 161—12 **12 Claims**

An upright tube is adapted to contain a candle or other heat source and is surrounded by a sleeve, with end portions of flexible bimetallic strips being mounted intermediate the tube and the sleeve so that the arms extend outwardly of both and can swing radially, carrying at their outer free ends respective weights. The sleeve can be raised and lowered with reference to the tube, or vice



versa, to vary the swingable free length of the respective bimetallic strips.

3,811,991
COLLAPSIBLE ARTIFICIAL SHRUB
Percy Dieffenbach, Blakely, Pa., assignor to Masterpiece, Inc., Blakely, Pa.
Filed Mar. 8, 1973, Ser. No. 339,468
Int. Cl. A47g *33/06*
U.S. Cl. 161—24 **8 Claims**



A vertically extending rod-like trunk member carries a plurality of limb assemblies in a circumferential array with each limb assembly including a straight main limb and a number of cross limbs extending outwardly therefrom at spaced longitudinal positions. The upper end of each main limb is coupled to the tree. At some distance below this coupling point for each limb assembly, an axially shiftable collar pivotably supports a radial array of arms which, in turn are pivotably coupled to the main limb of each limb assembly. Shifting of the axially shiftable member causes the main limbs to move from a substantially parallel inboard position relative to the rod-like trunk member to an outboard position in which the main limbs incline downwardly and outwardly to complete a shrub of conical configuration.

3,811,992
FIRE-PROOF LAMINATED PLYWOOD CORE
Takashi Handa and Minoru Saito, Tokyo, Japan, assignors to Adachi Plywood Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 37,418, Apr. 15, 1970, which is a continuation of application Ser. No. 607,621, Jan. 6, 1967, both now abandoned. This application Dec. 8, 1971, Ser. No. 206,148
Claims priority, application Japan, Jan. 14, 1966, 41/1,812
Int. Cl. B32b *21/06*
U.S. Cl. 161—267 **4 Claims**

Provided is a composition for rendering the core of a laminated plywood structure fire-proof. The composi-

tion in paste form comprises a viscosity builder, which is admixed with an aqueous solution consisting of tricresyl, glycerine, or guanidine phosphate, ammonium halide, zinc chloride, urea, or a compound thereof, a small amount of ammonium sulfate, a weak acid compound such as boric acid, ammonium borate or ammonium phosphate and a small amount of an antimony compound. After pretreating the core with a silicate or deliquescent composition and if necessary, providing a large number of scars on the surface of the core, the composition is applied to the surface of the core whereinafter permeation of the composition into the core is effected. After drying of the core, the untreated thin front and back veneers are applied by gluing to the surfaces of the core, thus providing a fire-proof plywood structure of a self-extinguishing untreated surface veneer and treated core, which has excellent varnish-brushability.

3,811,993

SYSTEM TO AVOID THERMAL DEGRADATION OF CHEMICAL COMPOUNDS DURING THE TREATMENT OF WOOD CHIPS

Pietro Ghisoni, Brezzo di Bedero, Italy, assignor to Vita Mayer & C. gia F. Lli Vita S.a.s., Milan, Italy

Filed July 7, 1972, Ser. No. 269,751
Claims priority, application Italy, July 10, 1971, 26,881/71
Int. Cl. D21c *3/24, 3/26*
U.S. Cl. 162—18 **1 Claim**

A system to avoid the decomposition of thermo-degradable compounds such as sodium borohydride used in the treatment of ligincellulosic material for the production of a high brightness and high yield pulp for use in paper making. Wet chips of lignincellulosic material are pressed to reduce the water content. The pressed chips are passed into an impregnation chamber which contains an alkaline solution and then are pressed a second time and the expressed liquid is recovered. Pressing raises the temperature of the liquid which is then cooled and is recirculated to the impregnation chamber. Compounds absorbed by the chips are added to the recovered liquid as it flows from the cooling station to the impregnation chamber.

3,811,994

METHOD OF CONTINUOUS CELLULOSE DIGESTION AND DIGESTER ADAPTED FOR PERFORMING THE METHOD

Bengt Sven Erik Ostberg, Karlstad, Sweden, assignor to Kamyr Aktiebolag, Karlstad, Sweden

Filed June 29, 1971, Ser. No. 157,855
Claims priority, application Sweden, June 29, 1970, 9,004/70
Int. Cl. D21c *3/24*
U.S. Cl. 162—19 **7 Claims**

In a continuous cellulose digester impregnation of chips with digesting liquor takes place in a top zone and digestion takes place in a lower zone. A comparatively low temperature is maintained over at least the greater part of the impregnating zone by preventing heated liquor from the digesting zone to enter the impregnating zone due to convection. In a transition zone cooled liquid is brought to flow radially and horizontally over the entire cross-section of the chips column in order to separate the two zones in temperature respects.

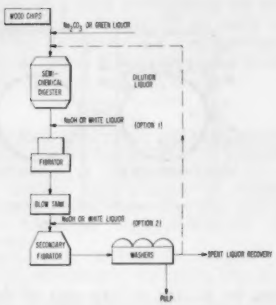
3,811,995

METHOD OF HIGH YIELD SEMICHEMICAL PULP PRODUCTION

Michael B. Ringley, Charleston Heights, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,184
Int. Cl. D21c *3/26*
U.S. Cl. 162—19 **10 Claims**

A process is set forth for producing pulp at a yield of 60 to 85% which comprises: combining in a pressure vessel, either the batch or continuous type, comminuted wood with a solution of cooking liquor comprising sodium ions wherein 60–100% thereof, measured as sodium oxide, is sodium carbonate and 0 to 30% thereof is sodium sulfide; cooking the mixture under pressure and heat until 40–15% of the organic components of the wood are solubilized; adding sufficient sodium hydroxide, either as sodium hydroxide or in the form of kraft white liquor, to the cooked mixture to raise the pH between 9 and 13; and mechanically fiberizing in the presence of the sodium hydroxide and spend cooking liquor, the cooked comminuted wood. The resulting pulps are useful for making unbleached structural paper, such as fluted medium for corrugated board, like 9 point corrugated medium.

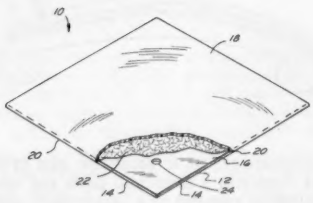


3,811,996

THREE-DIMENSIONAL COMPOSITE TILES FOR USE AS WALL COVERINGS

Edgwin R. Polk, Fords, N.J., assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed June 27, 1972, Ser. No. 266,528
Int. Cl. B32b *1/04, 3/26, 5/18*
U.S. Cl. 161—44 **3 Claims**



In a three dimensional composite artificial tile formed from a backing sheet of relatively stiff plastic material having a cover sheet of flexible plastic material superimposed on one side of the backing sheet and secured to the periphery thereof, an intermediate layer of resilient material is positioned between the stiff backing sheet and the flexible cover sheet to give the tile a three dimensional appearance.

3,811,997

SMOKE AND FLAME RESISTANT LAMINATE ARTICLES

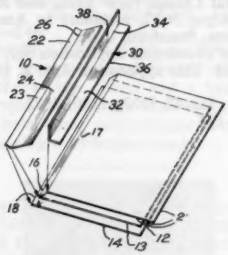
Edward L. Yuan, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,926
Int. Cl. B32b *3/12, 17/04, 27/12*
U.S. Cl. 161—68 **2 Claims**

Smoke and flame resistant structural laminate articles comprised of a film of an aromatic polyamide or poly-

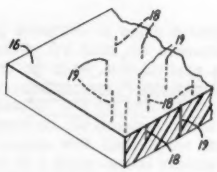
imide laminated over an impregnated fibrous reinforced cloth which may optionally be laminated over a honeycomb structure.

3,811,998
END PAPER ASSEMBLY
Fred James, Des Moines, Iowa, assignor to Library Binding Service, Inc.
Filed Sept. 22, 1972, Ser. No. 291,309
Int. Cl. B32b *3/04*
U.S. Cl. 161—100 **5 Claims**



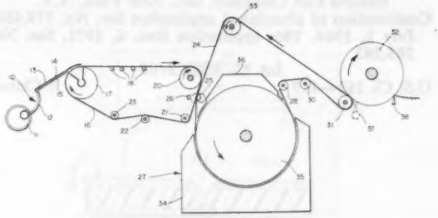
A method of binding and an end paper assembly for use in the binding of books includes a cover sheet and top and inside sheets and the cover and top sheets are attached to the inside sheet along a line adjacent to but spaced from the edge of the inside sheet to define a margin. A back liner material is then attached to the cover sheet and a portion of the liner material extends freely from the sheets. To bind the pages of the book, the end sheet assembly is first attached along its margin to the pages of the book, the cover sheet is folded back to cover the bound margin and the freely extending portion of the back liner material is folded over and adhesively bonded to the back of the book pages.

3,811,999
ETCHABLE COPOLYMER BODY
Robert L. Fleischer and Paul B. Price, Schenectady, N.Y., assignors to General Electric Company
Application Nov. 19, 1970, Ser. No. 91,140, now Patent No. 3,677,844, which is a continuation of abandoned application Ser. No. 702,366, Feb. 1, 1968. Divided and this application Jan. 28, 1972, Ser. No. 221,781
Int. Cl. B32b *3/10*; B29c *17/08*; B01d *39/16*
U.S. Cl. 161—109 **5 Claims**



A shaped copolymer comprised of etchable polymer and unetchable polymer contributing desired properties to the copolymer is bombarded with charged particles. As the particles pass through the shaped copolymer, they form substantially straight tracks of damaged copolymer. The bombardment of the copolymer with the individual charged particles is so highly localized that it damages only the track defining portions of the copolymer leaving the remainder of the copolymer substantially unaffected. The copolymer is then contacted with an agent to etch, i.e. extract, the tracks of damaged copolymer, and any additional desired portion of adjacent undamaged copolymer, leaving a substantial number of recesses or apertures depending upon the particular bombarding procedure and the thickness of the copolymer. The aperture-containing copolymer product of the present invention includes properties usually associated with nonetchable polymer. It is useful as a filter.

3,812,000
SOFT, ABSORBENT, FIBROUS, SHEET MATERIAL FORMED BY AVOIDING MECHANICAL COMPRESSION OF THE ELASTOMER CONTAINING FIBER FURNISHED UNTIL THE SHEET IS AT LEAST 80% DRY
Joseph L. Salvucci, Jr., Drexel Hill, Pa., and Peter N. Yiannos, Wilmington, Del., assignors to Scott Paper Company, Delaware County, Pa.
Filed June 24, 1971, Ser. No. 156,282
Int. Cl. B31f *1/14*; D21f *9/02*; D21h *3/64*
U.S. Cl. 162—111 **33 Claims**

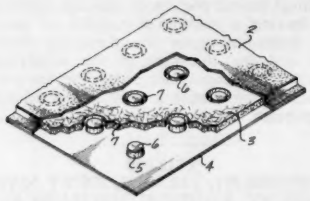


A fibrous web or sheet material, formed by deposition from an aqueous slurry and characterized by unusually high bulk and softness, achieved at least in part by the addition of an elastomeric bonding material to the aqueous slurry and by the avoidance of mechanical compression of the web until it is at least 80% dry, so that the elastomeric bonding material creates many of the interfiber bonds within the sheet material. In some instances, the web is subjected to differential creping techniques by adhering it in a printed pattern to the creping surface. In some embodiments, additional elastomeric bonding material is added in the printed pattern. The unusually high bulk of the web is demonstrated by very low average calculated density through its thickness under no load of less than 0.300 grams per cubic centimeter. Another significant feature indicative of the bulk and softness of the web is demonstrated by its relatively high TEA-to-stiffness ratio of greater than 1.50×10^{-4}. A method for forming such webs or sheet material is also disclosed, in which lignocellulosic fibers are mixed with water and with an elastomeric bonding material into a fiber furnish, which furnish is formed into a web. Water is removed from the web without mechanical compression of the web and, when the web is at least 80% dry, it is adhered to a creping surface and creped therefrom.

3,812,001
CUSHIONED ABSORBENT PAD
Arthur Sensor Ryan, Kelso, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Dec. 17, 1971, Ser. No. 209,213
Int. Cl. A61f *13/16*; B32b *3/10*
U.S. Cl. 161—114 **3 Claims**

An absorbent pad has a layer of absorbent material together with a plurality of load-bearing members positioned therein that are generally equal to the thickness of

the absorbent layer. The load applied to the overall pad is taken primarily by the load-bearing members allowing



the absorbent material to remain in a relatively uncompressed state and free to absorb liquid.

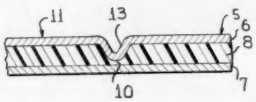
3,812,002
LAMINATE CONSTRUCTION

Randolph D. Lurie, Park Forest, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 379,650, July 1, 1964. This application Dec. 6, 1971, Ser. No. 205,283

Int. Cl. B32b *3/00*

U.S. Cl. 161—119 **5 Claims**



This disclosure relates to a novel method of forming a tear line in a laminate as well as the laminate per se and methodwise includes the steps of providing a tool having a heated edge, applying the heated edge to a laminate under pressure to effect a heating and flowing of a stiffening layer thereof, and effecting relative movement of the laminate and the tool along a predetermined line to form a weakening line in the stiffening layer.

Preferably though not necessarily the article is composed solely of a metal foil layer and a thermoplastic resin stiffening layer with the thermoplastic resin stiffening layer having a weakening line molded in the surface thereof remote from the foil layer.

3,812,003
POLYURETHANE COMPOSITION AND LAMINATES MADE THEREWITH

William M. Larson, Hudson, and Newell R. Bender, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 9,131, Feb. 11, 1970, which is a continuation of application Ser. No. 833,855, May 29, 1969, which in turn is a continuation of application Ser. No. 360,753, Apr. 17, 1964, all now abandoned. This application Jan. 12, 1972, Ser. No. 217,230

Int. Cl. B32b *7/04*

U.S. Cl. 161—156 **1 Claim**

This invention relates to an adhesive for use in forming laminates of polyester impregnated fiberglass. This adhesive comprises a reaction mixture of 100 parts of a reactive hydrogen containing polymeric material of about 700 to 4500 molecular weight selected from the class consisting of polyester polyols, polyether polyols and polyester amides, an organic polyisocyanate, at least 5 parts to no more than about 200 parts of an inert powdery filler with the proviso that the filler shall not exceed that amount which renders the resulting mixture unspreadable and sufficient monomeric nitrogen containing polyol having 3 to 6 hydroxyls to be essentially equivalent to the excess polyisocyanate. Catalysts of the tin and amine type may be utilized, if desired. Amounts of 38, 52 and 80 parts of organic polyisocyanate per 100 parts of the polymeric material are some of the levels used in some of the examples.

3,812,004
NATURALLY CRIMPED TEXTILE FIBERS

Suresh Natvarlal Chinai, New York, and Edmund Brigmanis, Brooklyn, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of abandoned application Ser. No. 736,350, June 12, 1968. This application Apr. 2, 1971, Ser. No. 130,810

Int. Cl. D02g *3/00, 3/02*

U.S. Cl. 161—173 **6 Claims**

A synthetic textile fiber having incorporated therein at least 1 percent (on the weight of fiber) of silica particles in the form of elongated aggregations having a length-to-width ratio of at least 10/1. Such fibers have improved anti-soiling properties and, preferably, are naturally crimped. Acrylonitrile polymer fibers of this type are made by forming loose aggregates of such silica particles in the spinning composition prior to spinning. During spinning, these loose aggregates become elongated.

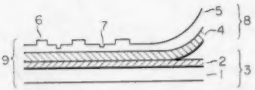
3,812,005
SELF-STICKING MATERIAL AND A PROCESS FOR PRODUCING THE SAME

Keizo Katagiri, Mamoru Sakaguchi, and Tokumaro Kamata, Katsuta, Japan, assignors to Nippon Kakoh Seishi K.K., Tokyo, Japan

Filed Apr. 3, 1972, Ser. No. 240,610

Int. Cl. B32b *27/22, 27/28, 15/40*

U.S. Cl. 161—247 **28 Claims**



A self-sticking material comprising a base sheet (**5**) with or without an adhesive (**10**) and a film of self-sticking composition (**4**) provided thereon with or without a releasing paper (**3**), and said self-sticking composition comprises 100 parts, by weight, of ethylene-vinyl acetate/vinyl chloride graft polymer (known as EVA/VC) and 31 to 100 parts of a plasticizer.

Said self-sticking material is used for preparing stickers and protecting sheets or the like.

ERRATA

For Classes 162—18, 162—19 and 162—111 see: Patents Nos. 3,811,939 thru 3,811,995 and 3,812,000

3,812,006
REPLACEMENT FOR LEATHER AND METHOD FOR MAKING SAME

Walter E. Schortmann, West Hartford, Conn., Michael A. Derose, Springfield, Mass., and Donald A. Ward, Wheaton, Ill., assignors to Texon, Inc., South Hadley Falls, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 843,238, July 18, 1969. This application Dec. 14, 1971, Ser. No. 207,969

Int. Cl. D21d *3/00*

U.S. Cl. 162—146 **8 Claims**

A replacement for leather which is a homogeneous sheet formed by the combination of fibrous material, a water base polyurethane latex binder and a hydrogen bonder. The leather replacement is produced by treating a fibrous web with a water base polyurethane latex and with a solution containing a hydrogen bonder.

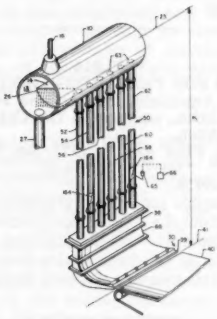
3,812,007
CONDUIT SYSTEM FOR CONVEYING FIBROUS STOCK FROM DEAERATOR CHAMBER TO HEADBOX IN PAPERMAKING MACHINE

Robert G. Kaiser, Hohokus, N.J., assignor to Clark & Vicario Corporation, North Tarrytown, N.Y.

Continuation-in-part of abandoned application Ser. No. 813,646, Apr. 4, 1969. This application Sept. 29, 1971, Ser. No. 184,839

Int. Cl. B01d *19/00;* **D21f** *1/06*

U.S. Cl. 162—343 **17 Claims**



Papermaking apparatus in which deaerated papermaking stock is gravity fed from the evacuated chamber of a stock receiver to paper web-forming means through dropleg supply conduit system interconnecting the bottom of this chamber and the exit slot or slice of paper web-forming headbox, the dropleg conduit system having entry communication with the receiver chamber along a substantial part of a major lateral expanse of the bottom portion of the deaerated stock collecting zone thereof, the droplet conduit system preferably having exit communication with the delivery passage of the paper web-forming headbox transversely in the direction of the transverse length of the exit slice. The conduit system is provided such that its flow course between the stock receiver and the web-forming headbox delivery passage has no course deviation laterally of the web-forming means axis. The dropleg conduit system may be provided in the form of a plurality of closely spaced parallel arranged pipes, the entry ends thereof being connected to the chamber collecting zone and the exit ends thereof being connected to the delivery passage. The dropleg conduit system also may be provided as a single, relatively wide chute having its passage connected by an elongated slot extending along a substantial portion of a major lateral expanse of the bottom of the chamber collecting zone. Various forms of flow control valves may be embodied in the dropleg supply conduit system to restrict selectively their effective size for correspondingly regulating the rate of flow of the deaerated stock to the paper web-forming headbox in accordance with the demand for the particular grade of paper being made.

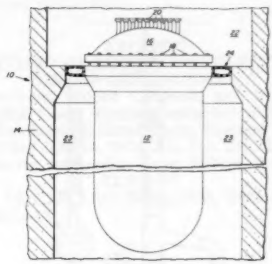
3,812,008
SEAL RING FOR NUCLEAR REACTORS

Edward R. Fryer, 506 Magnolia Ave., Frederick, Md. 21701

Filed May 20, 1970, Ser. No. 39,027

Int. Cl. G21c *19/02*

U.S. Cl. 176—30 **1 Claim**



An inflatable seal ring for use between the annular surface of a nuclear reactor vessel and its surrounding biological shield, which forms part of the housing for the reactor vessel. The seal is used during refueling of the vessel to prevent water maintained in the refueling canal above the reactor vessel from entering the reactor cavity.

3,812,009
STEREOSPECIFIC PROCESS FOR THE PREPARATION OF L-3,4-DIHYDROXYPHENYLALANINE (L-DOPA) AND ANALOGS THEREOF

Frank E. Semersky, Oregon, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,796

Int. Cl. C12d *1/00*

U.S. Cl. 195—29 **6 Claims**

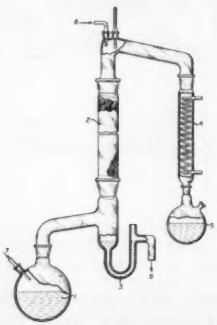
Stereospecific process for the preparation of L-3,4-dihydroxyphenylalanine and N-derivatives thereof from substrate materials by enzymatic oxidation of said substrate materials with insolubilized tyrosinase followed by reduction and hydrolysis of the oxidation products as needed. The substrate materials which can be used in the process of this invention can be L-tyrosine and certain N-derivatives thereof. Ordinarily, the biocatalytic oxidation of these substrate materials will generally yield an oxidation product consisting essentially of either the corresponding o-dihydric compound of the substrate material or the corresponding o-quinone of this substrate material and mixtures thereof. Since tyrosinase is capable of biocatalytic oxidation of these o-dihydric compounds, the

supernatant containing these oxidation products is separated from the tyrosinase in order to prevent further oxidation of these compounds and especially prior to reduction of more completely oxidized substrate materials to the o-dihydric form. In certain limited instances, for example, where N-acetyl-L-tyrosine is the substrate material, the hydrolysis of N-acetyl-L-3,4-dihydroxyphenylalanine to L-Dopa can be accomplished enzymatically through the contacting of the N-substituted compound with either carboxypeptidase A or acylase. The L-3,4-dihydroxyphenylalanine thus prepared has therapeutic value in the treatment of Parkinson's disease, and other diseases of the central nervous system.

3,812,010
METHOD OF PRODUCING FRUCTOSE AND GLUCOSE FROM SUCROSE

Ernst Nitsch, Linz, Austria, assignor to Laevosan-Gesellschaft Chem.-Pharm. Industrie Franck & Dr. Freudl, Linz, Austria

Continuation-in-part of abandoned application Ser. No. 713,366, Mar. 15, 1968. This application Aug. 4, 1971, Ser. No. 168,973
Int. Cl. C13k *1/00, 3/00, 9/00*
U.S. Cl. 195—31 F **13 Claims**



Method for producing fructose and glucose from a mixture thereof in a mineral acid-free aqueous solution. Water is evaporated from said solution at a temperature between 50° C. and 120° C. A low boiling point alcohol is added to said solution, and glucose and fructose then precipitated. The water content of said solution is not greater than 1% when fructose is precipitated therefrom. The invention also includes a method of preparing said mixture in said solution from sucrose by conversion thereof to invert sugar.

3,812,011
METHOD OF CONVERTING STARCH TO β-CYCLODEXTRIN

Shigetaka Okada, Nara, and Naoto Tsuyama, Okayama, Japan, assignors to Hayashibara Biochemical Laboratories, Incorporated, Okayama-ken, Japan

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,347
Claims priority, application Japan, Sept. 30, 1971, 46/76,485
Int. Cl. C12b *1/00*; C07g *7/02*
U.S. Cl. 195—31 R **5 Claims**

The cell-free broth of a culture of *Bacillus megaterium* T 5 (ATCC 21737) or the enzyme recovered therefrom converts starch predominantly to β-cyclodextrin, and the latter can be obtained in high yields practically free of α- and γ-cyclodextrin by interrupting the fermentation at a suitable stage.

3,812,012
METHOD OF DEGRADING NATURAL PLANT MATERIAL WITH AN ENZYME PREPARATION

Lothar Buschmann, Hofheim, Taunus, Paul Prave, Neuenhain, Taunus, and Dieter Sukatsch, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Nov. 5, 1971, Ser. No. 196,175, now abandoned. Divided and this application July 24, 1973, Ser. No. 382,220
Claims priority, application Germany, Nov. 7, 1970, P 20 54 948.8
Int. Cl. A61k *19/00*
U.S. Cl. 195—33 **1 Claim**

A method degrading natural plant material with an enzyme preparation obtained by the cultivation of *Bacillus polymyxa* and and containing pectic acid trans-eliminase as the effective ingredient thereof.

3,812,013
SOLUBLE CELLULASE ENZYME PRODUCTION

Winthrop D. Bellamy, Schenectady, and Ananda M. Chakrabarty, Latham, N.Y., assignors to General Electric Company

Filed Mar. 1, 1972, Ser. No. 230,666
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **7 Claims**

A process for the preparation of an improved soluble cellulase material is described. Optimum activity for this cellulase enzyme occurs over a broader range of pH and at a higher temperature than the cellulase produced by mesophilic fungi.

3,812,014
PROCESS FOR PREPARING LINCOMYCIN

Alexander D. Argoudelis, Portage, and John H. Coats, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 8, 1972, Ser. No. 278,784
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **3 Claims**

A microbiological process for preparing the antibiotic lincomycin without the concomitant production of lincomycin B (4'-depropyl-4'-ethyllincomycin). The absence of lincomycin B in the fermentation beer results in increased lincomycin recovery efficiency from the fermentation beer.

3,812,015
DETERMINATION OF ORNITHINE-CARBAMYL-TRANSFERASE

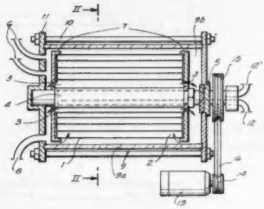
Roger Prost, Versailles, France, assignor to Lucien International, Colombes, France

No Drawing. Filed Feb. 9, 1973, Ser. No. 331,125
Claims priority, application France, Feb. 29, 1972, 7206918
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **8 Claims**

The level of ornithine-carbamyl-transferase in serum is determined by reaction with a composition containing sufficient ethylenediaminetetraacetate buffer that a pH of 7.7 is produced on dilution to a concentration of 0.2 M; dilithium carbamyl phosphate; L-ornithine hydrochloride; and urease in an amount at least equivalent to the urea in the serum but less than that which would produce an ornithine-carbamyl-transferase activity of 2 mIU/ml. under the conditions of the analysis. The citrulline so

produced is then determined colorimetrically by adding trichloroacetic acid and then reacting with diacetyl monoxime and thiosemicarbazide. As a control, an identical sample of serum is reacted with a composition which does not contain the L-ornithine hydrochloride but which is otherwise identical.

3,812,016
CULTURE-GROWING APPARATUS
Hans Muller, Im Allmendli, Erlenbach, Zurich 139, Switzerland
Filed July 21, 1972, Ser. No. 274,063
Claims priority, application Switzerland, Aug. 13, 1971, 11,986/71; Apr. 6, 1972, 5,095/72; Apr. 28, 1972, 6,457/72
Int. Cl. C12b *1/10*
U.S. Cl. 195—139 **11 Claims**



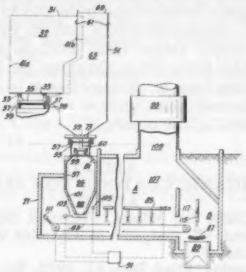
A vessel has a chamber in which media requisite for growing of a desired culture are to be accommodated. A horizontal shaft extends through this chamber and is rotatable about its own longitudinal axis. A spiral carrier element is mounted on the shaft for rotation therewith, being composed of a plurality of convolutions and consisting of glass, of metal coated with vitreous enamel or of synthetic plastic.

3,812,017
DESULFURIZED CHAR WITH PHOSPHORIC ACID
Joseph G. Santangelo, Brookville, Pa., and Thomas P. Dorchak, Nabnasset, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
No Drawing. Filed July 26, 1972, Ser. No. 275,119
Int. Cl. C10b *57/00*
U.S. Cl. 201—17 **8 Claims**

Crushed coal may be desulfurized by slurrying with a phosphoric or phosphorus acid or mixture thereof, removing excess liquid, and heating the mixture at an elevated temperature to drive the sulfur from the coal.

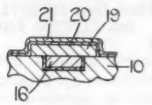
3,812,018
MULTI-STAGE COKE COOLER
Basil W. Hinchliffe, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Continuation-in-part of applications Ser. No. 794,485, Jan. 28, 1969, now Patent No. 3,580,813, and Ser. No. 145,640, May 21, 1971, now abandoned. This application Apr. 19, 1973, Ser. No. 352,409
Int. Cl. C10b *39/00*
U.S. Cl. 202—230 **4 Claims**

A continuous, multi-stage coke cooling apparatus is presented for use with a conventional coke oven battery. Hot, incandescent coke is cooled to a predetermined temperature in a plurality of closed cooling zones. Each cooling zone has a coke conveyor means for conveying a uniform layer of hot coke therethrough and a water spraying means for cooling the coke. The first cooling zone includes a receiving means for receiving the hot coke from a hot coke receiving car and for holding the hot coke while portions of the hot coke are being metered onto the coke conveying means. The later cooling zone includes detecting means for determining the temperature of the hot coke after it has been initially cooled with water in the first cooling zone. The water sprays in the later



cooling zone are responsive to the heat detecting means which regulates the necessary quantity of water that is sprayed onto the initially cooled coke to cool it to the final, predetermined temperature.

3,812,019
METHOD OF PRODUCING ELECTRIC WIRING ARRANGEMENT
Victor Needham, Balsall Common, and Brian Francis Bowen, Hall Green, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed July 14, 1972, Ser. No. 271,729
Claims priority, application Great Britain, July 14, 1971, 32,931/71
Int. Cl. C23b *5/48;* B41m *3/08;* H05k *1/00*
U.S. Cl. 204—15 **32 Claims**



A method of producing an electric wiring arrangement of the kind having a plurality of conductors formed as thin films on an insulating base, and wherein the conductors crosses one another and are mutually insulated at the crossover point, includes forming channels in the base at the crossover points, filling the channels with conductive material, applying insulating material which covers part of the material in the channels and extends on to the adjacent insulating base, and applying a pattern of conductive material which extends over the insulating material to form the crossover and also contacts the exposed material in the channels.

3,812,020
ELECTROLYTE AND METHOD FOR ELECTROPLATING AN INDIUM-COPPER ALLOY AND PRINTED CIRCUITS SO PLATED
John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,193
Int. Cl. C23b *5/32, 5/34, 5/48*
U.S. Cl. 204—24 **11 Claims**

This invention relates to a novel electroplating bath for the electrodeposition of metal ions from an acid solution of said metal ions and indium ions. The plating baths of this invention produce a bright, ductile, more refined

grained metal coating and allow a higher limiting current density. Preferably the bath is a copper plating bath comprising a mixture of a copper salt, indium salt and an acid selected from the group consisting of sulfuric, phosphoric, fluoboric and mixtures thereof, each being present in an amount which upon dissolution in an aqueous bath provides a copper concentration from 5 to 35 grams per liter, an indium concentration such that the weight ratio of indium to copper ranges from 0.002 to 4.0 and an acid concentration from 100 to 700 grams per liter. The copper plating baths have particular efficacy in the copper plating of recessed areas, such as perforated substrates, for use as printed circuit boards.

3,812,021

INORGANIC COATINGS FOR ALUMINOUS METALS

H. Lee Craig, Jr., Miami, Fla., and Harold J. Coates, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Filed Dec. 11, 1972, Ser. No. 314,209
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **10 Claims**

Siliceous coatings having good adhesion, hardness and smoothness and corrosion resistance are produced on the surface of an aluminous metal by immersing the metal in an aqueous bath of an alkali silicate, containing an alkali chromate, molybdate, or tungstate, and further containing an alkali carbonate, phosphate, or borate, and passing current through said bath at a voltage predominantly positive and sufficient to cause a uniform scintillation or flashing at the anode surface. The coating thus obtained is decorative and scratch-resistant and also provides a good base for a cover coating such as a plastic.

3,812,022

PIGMENTED SILICEOUS COATINGS FOR ALUMINOUS METALS

Charles M. Rogers and Daniel J. Schardein, Jr., Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Filed Dec. 11, 1972, Ser. No. 314,203
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **6 Claims**

Pigmented siliceous coatings having good adhesion, hardness and smoothness are produced on the surface of an aluminous metal by immersing the metal as anode in an aqueous bath of an alkali metal silicate containing an insoluble pigment, and passing full-wave rectified alternating current through said bath at a voltage sufficient to cause dissociation of the bath constituents by multiple spark discharging at the anode surface. The bath may contain an alkali chromate, molybdate or tungstate, and may further contain an alkali carbonate, phosphate or borate. The colored coating thus obtained is decorative and useful on building trim, aluminum shingles and siding, and the like.

3,812,023

ANODIC PRODUCTION OF PIGMENTED SILICEOUS COATINGS FOR ALUMINOUS METALS

Daniel J. Schardein, Jr., and Charles M. Rogers, Richmond, Va., and H. Lee Craig, Jr., Miami, Fla., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Filed Dec. 11, 1972, Ser. No. 314,045
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **6 Claims**

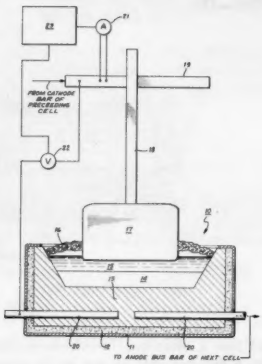
Pigmented siliceous coatings having good adhesion, hardness and smoothness are produced on the surface of an aluminous metal by immersing the metal as anode in an aqueous bath of an alkali metal silicate containing an insoluble pigment, and passing full-wave rectified alternating current through said bath at a voltage sufficient to cause dissociation of the bath constituents by multiple spark discharging at the anode surface. The bath also contains an alkali chromate, molybdate or tungstate, and an alkali carbonate, phosphate or borate. The colored coating thus obtained is decorative and useful on building trim, aluminum shingles and siding, and the like.

3,812,024

CONTROL OF AN ALUMINUM REDUCTION CELL

Warren H. Goodnow, Palo Alto, Calif., Sidney L. Cauvin, Jr., New Orleans, La., and Joseph G. C. Simard, Ravenswood, W. Va., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 20, 1972, Ser. No. 236,481
Int. Cl. C22d *3/12*
U.S. Cl. 204—67 **4 Claims**



A process for controlling the feeding of alumina to a reduction cell comprising determining a smoothed cell resistance, comparing the cell resistance with the lowest base level resistance and, when the difference exceeds a predetermined amount ΔR^*, feeding alumina to the cell. The value of ΔR^* is varied according to the noise level of the cell.

3,812,025

CROSSLINKING OR OLEFIN COPOLYMERS CONTAINING KETONE GROUPS USING HIGH ENERGY RADIATION

James Edwin Guillet, 31 Sagebrush Lane, Don Mills, Ontario, Canada

No Drawing. Continuation of abandoned application Ser. No. 763,980, Sept. 30, 1968. This application Sept. 30, 1971, Ser. No. 185,447
Claims priority, application Great Britain, Oct. 4, 1967, 45,217/67
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.14 **4 Claims**

Olefin copolymers containing ketone groups are crosslinked by treatment with high energy radiation such as γ-rays or electron beams.

3,812,026

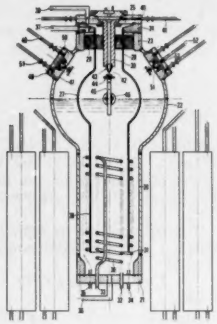
PRESSURIZED ELECTROLYZER INCLUDING GAS PRODUCT-ELECTROLYTE SEPARATING MEANS

Gerard Bertrand, Fontaine, Paul Perroud, Meylan, and Martial Sylvestre-Baron, St.-Martin d'Heres, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 25, 1972, Ser. No. 220,648
Claims priority, application France, Jan. 26, 1971, 7102460
Int. Cl. B01k *3/00*
U.S. Cl. 204—270 **5 Claims**

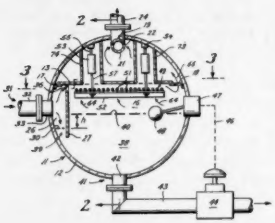
The electrolyzer is constituted by a plurality of cylindrical unitary cells which are independent, leak-tight and withstand the rated pressure.

The unitary cells are of the single-pole or double-pole type and are connected electrically in series, supplied



in parallel with electrolyte and in turn supply two-phase mixtures in parallel to a spherical-head, constant-level separator.

3,812,027
SEPARATOR FOR OIL-CONTINUOUS DISPERSIONS
Howell R. Jarvis and Ernest A. Colé, Jr., Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Filed Oct. 17, 1972, Ser. No. 299,494
Int. Cl. B03c *5/02*
U.S. Cl. 204—302 **13 Claims**

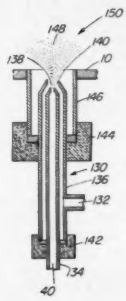


A separator for oil-continuous dispersions containing a dispersed water phase. A horizontal vessel contains a horizontal non-pressure baffle forming an outlet zone superimposed above an electric field treatment zone. Openings along one side of the baffle provide fluid communication between these zones. An open-bottom inlet zone, extending longitudinally along the other side of the vessel, is formed by a vertical non-pressure baffle extending downwardly from the horizontal baffle to adjacent the bottom of the vessel. A water separation zone extends upwardly to a horizon intermediate the open bottom of the inlet zone and the horizontal baffle to define the electrical field treatment zone. Passageways in the vertical baffle deliver dispersion from the inlet zone into the electric field treatment zone with volumes of bulk water phase being discharged downwardly through the open bottom of the inlet zone into the water separation zone. Electric field resolution produces a dry oil phase passing into the outlet zone for removal from the vessel. Accumulating water phase is removed through an outlet from the water separation zone.

3,812,028
HYDROTREATMENT OF FOSSIL FUELS
Arnold N. Wennerberg, Chicago, and Alvin W. Frazier, Chicago Heights, Ill., assignors to Standard Oil Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 144,472, May 18, 1971, now Patent No. 3,715,303, dated Feb. 6, 1972. This application Feb. 5, 1973, Ser. No. 329,877
Int. Cl. C10g *13/06, 37/06;* **B10j** *11/06*
U.S. Cl. 208—112 **19 Claims**

Fossil fuels containing polynuclear aromatics are hydrotreated at hydrogen partial pressures in excess of 2200 p.s.i.g. by passing such a fossil fuel through a zone maintained at elevated temperatures and including a catalyst comprising activated carbon and a metallic component.

3,812,029
DEVICE FOR INJECTING EASILY COKED FLUIDS INTO A HIGH TEMPERATURE VESSEL
Paul W. Snyder, Jr., Pitman, N.J., assignor to Mobil Oil Corporation
Filed Oct. 13, 1972, Ser. No. 297,548
Int. Cl. C10g *9/16, 11/18*
U.S. Cl. 208—113 **8 Claims**

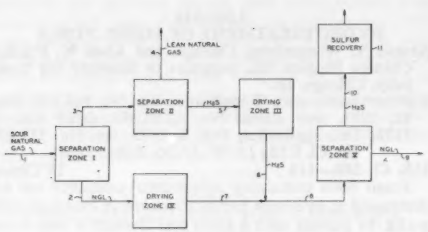


Novel oil injector assembly comprising an inner tube, a concentric outer tube, an inner nozzle terminating the inner tube, an outer nozzle terminating the outer tube concentric and forward of the inner nozzle, a vessel into which said nozzles project, means for introducing an easily coked fluid into said inner tube, through said inner nozzle and into said vessel, and means for introducing water, at a temperature and flow rate lower than the temperature and flow rate respectively of said easily coked fluid, into said outer tube, through said outer nozzle and into said vessel.

3,812,030
PROCESS FOR THE TRANSPORTATION OF ACID GASES IN NATURAL GAS LIQUIDS STREAMS
Harris A. Clay, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 13, 1972, Ser. No. 297,361
Int. Cl. C10g *5/00*
U.S. Cl. 208—340 **9 Claims**

A process for the preparation and transportation of an at least partially dehydrated acid gas/natural gas liquids mixture is described which comprises separating a sour

field natural gas stream into a natural gas stream, an acid gas stream and a natural gas liquids stream, drying the separated acid gas stream and natural gas liquids stream, mixing the dried acid gas stream and dried natural gas



liquids stream, transporting the dried acid gas and natural gas liquids mixture through a pipe line to a separation zone and recovering therein the acid gas content of said gas and natural gas liquids mixture.

3,812,031
SELECTIVE ADSORPTION OF PHENOLS FROM SOLUTION IN WATER

Frederic C. McCoy, Beacon, and Raymond C. Schlicht, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

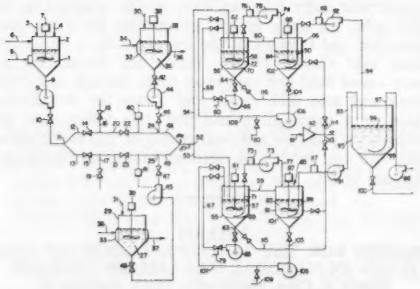
No Drawing. Continuation-in-part of abandoned application Ser. No. 59,344, July 29, 1970. This application Sept. 20, 1972, Ser. No. 290,686
Int. Cl. B01d *15/06*
U.S. Cl. 210—30 **11 Claims**

Extraction of phenolic materials from aqueous solutions by means of polyurethane foam.

3,812,032
PROCESS FOR TREATING DOMESTIC AND INDUSTRIAL LIQUID WASTES

George M. Chappell, Drakes Island, Box 96, Wells, Maine 04090

Filed Aug. 6, 1971, Ser. No. 169,739
Int. Cl. C02b *1/20*
U.S. Cl. 210—52 **21 Claims**



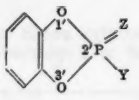
A process for treating domestic, municipal or industrial liquid waste to reduce B.O.D. of the waste comprising adding a sufficient amount of an acid formula and a sufficient amount of an alkaline formula to said waste, to thereby cause evolution of heat and cause flocculation of solids, and separating the resulting solids from the liquid. The novel acid formula and alkaline formula are disclosed. Liquid wastes treated by the process of this invention can be safely discharged into rivers, lakes and streams. In addition the process is extremely efficient since flocculation is rapid, and in many instances starts immediately upon the addition of either formula to the liquid waste.

3,812,033
LUBRICATING COMPOSITIONS CONTAINING BENZO-(1',3',2'-)DIOXAPHOSPHOLES

Lothar G. Dulog, Sint Artens Latem, and Sylvain A. R. Dewaele, Evergem, Belgium, assignors to S.A. Texaco Belgium N.V.

No Drawing. Original application Sept. 30, 1971, Ser. No. 185,387. Divided and this application Jan. 18, 1973, Ser. No. 324,631
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.7 **4 Claims**

Phosphorus derivatives of o-dihydroxybenzenes effective as lubricant additives are defined by the formula:



wherein Z represents oxygen or sulfur or may be absent; Y represents NHR or NR_2, where R is alkyl having up to 30 carbon atoms in the chain or aryl or aralkyl having up to 22 carbons. The compounds are useful in lubricating compositions when present therein in an amount ranging from about 0.01 to 50 percent by weight of the composition.

3,812,034
POUR POINT DEPRESSION

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,375
Int. Cl. C10m *1/28*
U.S. Cl. 252—57 **8 Claims**

Hydrocarbon oil which loses fluidity at low temperature containing, in a pour point depressant concentration, a copolymer of aryl-C_2–C_{22}-alkylene and unsaturated ester. Specific pour point depressants are copolymer of styrene-methylmethacrylate or copolymer of styrene-vinyl acetate.

3,812,035
LUBRICATING OILS

Robert A. Krenowicz and William P. Scott, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 17, 1972, Ser. No. 254,015
Int. Cl. C10m *1/16*
U.S. Cl. 252—59 **4 Claims**

Lubricating oil compositions comprising certain synthetic alkaryl hydrocarbon lubricants and mineral lubricating oils have improved properties, such as oxidation stability and pour point. A typical synthetic alkaryl hydrocarbon lubricant contains from 61 to 92 weight percent di-n-alkylbenzenes and 5 to 30 weight percent trialkyl-substituted tetrahydronaphthalenes. Because of their low pour points, the lubricating oil compositions are useful in certain specific low temperature (i.e., Arctic) operations. In addition, the lubricating oil compositions are useful in preparing lubricating greases for low temperature operations.

3,812,036
PREPARATION OF SYNTHETIC HYDROCARBON LUBRICATION
Hugh E. Romine, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed Oct. 2, 1972, Ser. No. 293,965
Int. Cl. C10m *1/16, 1/18*
U.S. Cl. 252—59 20 Claims

A process for preparing a synthetic hydrocarbon lubricant, said lubricant comprising a mixture of long-chain, substantially linear, alkyl-substituted aryl compounds, containing a total of 12 to 42 carbon atoms in the long-chain alkyl group or groups, and linear mono-olefin oligomers, said process comprising: (a) contacting an admixture of C_6–C_{18} linear mono-olefins and mononuclear aromatic compounds with a mild Friedel-Crafts catalyst under reaction-promoting conditions of time and temperature and (b) recovering from the reaction product of step (a) the desired product. If desired, the mixture of step (a) can contain a minor amount of mononuclear aromatic compounds containing a C_6–C_{18} straight-chain alkyl group. The product has excellent low temperature viscosity and pour point properties, as well as an excellent viscosity index. The product is especially suitable as a lubricant for low temperature (i.e. below —40° F.) conditions.

3,812,037
LIQUID DEVELOPER COMPOSITION
Yasuo Tamai, Seiichi Taguchi, Kiyoshi Yamada, and Nobuo Yamamoto, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.
No Drawing. Filed Jan. 21, 1972, Ser. No. 219,903
Int. Cl. G03g *9/00*
U.S. Cl. 252—62.1 4 Claims

A liquid developer for electrophotography to be used for developing an electrostatic latent image comprising a finely divided gelatin toner and a finely divided material of a substituted α-chloro-β-(p-methoxy-phenoxy)-β-carboxy-acrolein contained in a carrier liquid having a specific dielectric constant of less than about 3.5.

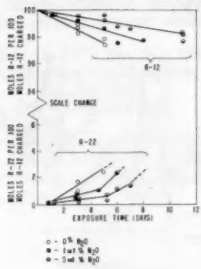
3,812,038
ELECTROLYTES
Daniel J. Anderson, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
No Drawing. Application July 9, 1969, Ser. No. 840,504, now Patent No. 3,670,212, which is a continuation-in-part of abandoned application Ser. No. 648,251, June 23, 1967. Divided and this application Mar. 22, 1971, Ser. No. 127,055
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 10 Claims

An electrolyte comprising a binary organic system which forms in the correct proportions an azeotropic composition having a boiling point higher than that of either of the system's pure components and a solvent inert to the azeotropic mixture.

3,812,039
ELECTROLYTE FOR ELECTROLYTIC CAPACITOR
Shinichi Niwa, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan
No Drawing. Filed Feb. 25, 1972, Ser. No. 229,572
Claims priority, application Japan, Feb. 25, 1971, 46/9,520; June 30, 1971, 46/48,292; Sept. 1, 1971, 46/67,590
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 2 Claims

An electrolyte for electrolytic capacitors which comprises N-methylformamide as a solvent and at least one of ammonium, amine and alkali metal acid maleate as a solute dissolved therein. The electrolyte has a stable, low viscosity and a high conductivity so that an electrolytic capacitor using the same shows a high performance over a wide range of temperature for a long period of time.

3,812,040
HEAT TRANSFER FLUIDS
Hans J. Borchardt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of abandoned application Ser. No. 190,938, Oct. 20, 1971. This application Aug. 11, 1972, Ser. No. 279,834
Int. Cl. C09a *3/02*
U.S. Cl. 252—68 9 Claims



An improved heat transfer process carried out with a circulating fluid selected from dichlorodifluoromethane, 1,2-dichloro - 1,1,2,2 - tetrafluoroethane, 1,1-difluoroethane and mixtures thereof, which process comprises circulating as the heat transfer medium said fluid admixed with about 0.1–10 weight percent, based on the fluid weight, of nitrous oxide.

3,812,041
NON-GELLING HEAVY DUTY LIQUID LAUNDRY DETERGENT
Jack Thomas Inamorato, Westfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed June 23, 1972, Ser. No. 265,721
Int. Cl. C11d *1/83*
U.S. Cl. 252—89 17 Claims

A clear non-gelling liquid synthetic organic heavy duty laundry detergent composition comprising a nonionic detergent having the molecular configuration of the condensation product of a higher fatty alcohol and ethylene oxide, an anionic detergent higher fatty alkyl polyethenoxy sulfate, a brightening agent, water and a lower monohydric alcohol. Small proportions of sequestering agents and salt-forming bases may also optionally be present in the composition. The detergent composition is a single phase clear stable liquid but may be made opaque, creamy or opalescent if desired. Furthermore, the composition is substantially neutral or only slightly alkaline when measured at a 1% concentration in water and cleans soiled laundry to a degree comparable with that obtained utilizing phosphate built alkaline detergents. In addition, the liquid detergent composition is biodegradable.

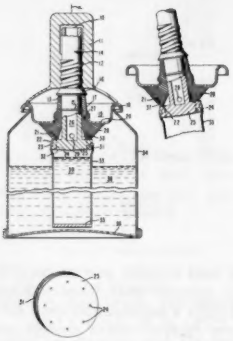
3,812,042
CLEAR LIQUID DETERGENT PACKAGE
Denise Verdier, Le Bourget, France, assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Filed June 23, 1972, Ser. No. 265,566
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 9 Claims

A detergent package comprising a transparent, plastic container and a clear, stable liquid detergent composition therein consisting essentially of about 10 to 60% by weight of a C_{10} to C_{20} alkyl sulphonate solubilized in an aqueous liquid vehicle which may include up to 15% by weight of urea, C_2 to C_3 alkanol and/or sulphonated hydrotrope as a solubilizing agent.

3,812,043
PACKAGE FOR DISPENSING AN ICE-REMOVING COMPOSITION

Willem B. van der Linde, Cherry Hill, N.J., and Clinton A. Weslager, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 85,808, Oct. 30, 1970, which is a continuation-in-part of application Ser. No. 660,346, Aug. 14, 1967, both now abandoned. This application Dec. 26, 1972, Ser. No. 318,504
Int. Cl. C09k *3/18*
U.S. Cl. 252—70 10 Claims

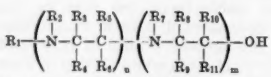


A package adapted for preparing and dispensing a heated de-icer composition comprising a container having an outlet and a valve adapted to control the dispensing of said composition therefrom, and containing

(A) at least one water-soluble ice-melting substance selected from the group consisting of monohydric C_1–C_3 saturated aliphatic alcohols, ethylene glycol, propylene glycol, diethylene glycol, acetone, methylethyl ketone or mixtures of the foregoing,

(B) a peroxide containing compound capable of reacting with rapid generation of heat when contacted with an initiator,

(C) at least one initiator capable of initiating, at the storage temperature of the package, the heat-generating reaction of said peroxide containing compound, said initiator selected from the group consisting of sulfite salts of alcohol amines having the structure



wherein:

R_1, R_2 and R_7 can be the same as each other or different from each other and are selected from the group consisting of: H, CH_3, C_2H_5, C_3H_7, C_4H_9, C_2H_4OH, C_3H_6OH, or C_4H_8OH,

R_3, R_4, R_5, R_6 and R_8, R_9, R_{10}, R_{11} can be the same as each other or different from each other and are selected from the group consisting of H, CH_3, or C_2H_5,

m can be 0 through 5, n can be 1 through 6 provided that n and m are selected so that $m+n$ is no greater than about 6,

at least one of the materials (B) ad (C) being isolated when said valve is closed,

(D) a propellent capable of providing sufficient fluid pressure to dispense substance (A) from said outlet when said valve is open, and

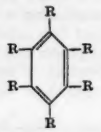
(E) means to provide intimate contact between materials (A), (B) and (C) while (A) is being conveyed toward said outlet.

3,812,044
DETERGENT COMPOSITION CONTAINING A POLYFUNCTIONALLY-SUBSTITUTED AROMATIC ACID SEQUESTERING AGENT

Daniel S. Connor and Harry Karl Krummel, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,159
Int. Cl. C11d *1/10, 3/20*
U.S. Cl. 252—89 2 Claims

A detergent composition is provided comprising a water-soluble organic synthetic detergent, and as a detergency aid, a sequestering agent which is a water-soluble salt of a polyfunctionally-substituted aromatic acid compound having the formula



wherein at least two R's are different functional groups of the type described.

3,812,045
DISHWASHING COMPOSITION AND METHOD OF MAKING SAME

Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 780,244, Nov. 29, 1968. This application Oct. 7, 1971, Ser. No. 187,525
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 5 Claims

A dishwashing composition is prepared by first converting an alkali-metal trimetaphosphate to the alkali-metal tripolyphosphate hexahydrate by reaction with sodium hydroxide in the presence of a sulfonated alkyl naphthalene wetting agent and formulating the product with various components to form a dishwashing composition having highly desirable characteristics.

3,812,046
GERMICIDAL LIQUID CLEANER

Albert Jay Lancz, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,826
Int. Cl. C11d *1/10, 1/62, 3/48*
U.S. Cl. 252—106 5 Claims

A phosphate-free germicidal liquid cleaner contains an alkyl dimethyl benzyl ammonium chloride, a nonionic surfactant, nitrilotriacetic acid trisodium salt builder, and sodium bicarbonate stabilizer.

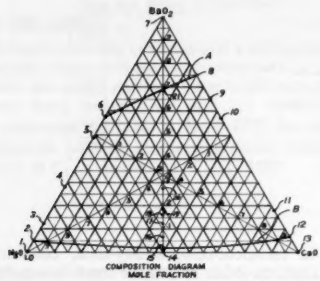
3,812,047
DIHALOBUTENE DIOL CONTAINING COMPOSITIONS

Gaetano F. D'Alelio, South Bend, Ind., and Erich Kuehn, Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,109
Int. Cl. C08g *22/16*
U.S. Cl. 252—182 7 Claims

Polyol blends which comprise a mixture of dihalobutene diol and polyhydroxy compounds wherein the hydroxyl number of the mixture is from about 200 to 800 are disclosed. A process for preparing polyol blends and flame-retardant polyurethane compositions using the polyol blends are also disclosed.

3,812,048
OXYGEN PROCESS PELLETS
Lester G. Massey, Moreland Hills, Ohio, and Paul B. Tarman, Elmhurst, and Jack Huebler, Deerfield, Ill., assignors to Consolidated Natural Gas Service Co., Inc., Cleveland, Ohio
Filed Apr. 7, 1972, Ser. No. 241,957
Int. Cl. C01b 13/08
U.S. Cl. 252—186 36 Claims



Special oxygen acceptor compositions in pellet form for the production of oxygen in a modified Brin-type process, and method for the production of the pellets. The compositions comprise a physical mixture of finely ground dolomitic quicklime and barium peroxide (DQL-BaO_2) preferably pelletized in a dry process not employing binders. The pellets have high crushing strength which permits larger reactor size. At the same time, the pellets have good porosity which permits use of relatively large size pellets which exhibit low pressure drop without loss of activity. The pellets show very long life (over 40,000 cycles) without disintegration, and without loss of chemical activity. Typical operation is at 1–200 p.s.i.a. and 1300–1600° F. The pellets exhibit increased strength after use. In contrast to fluidized bed operation using powder mixtures, the active BaO_2 in pelleted form with DQL cannot plate out in use. The pellets of this invention are relatively insensitive to humidity in preparation, shipment and storage. In addition to increased oxygen production per mole of barium peroxide and reduction in cycle times, a significant reduction in the amount of barium oxides required to produce oxygen at any given rate is exhibited by the pelleted compositions.

3,812,049
PRECIPITATION DELAYING PROCESS EMPLOYING A SYNERGISTIC MIXTURE OF COMPLEXING AGENTS
Arend Jaman Noothout, Oosterbeek, Johannes Bastiaan Willem Kanij, Zevenaar, and Otakar Votocek, Arnhem, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,285
Claims priority, application Netherlands, Apr. 29, 1970, 7006258
Int. Cl. C01g 43/02
U.S. Cl. 252—301.1 S 6 Claims

An improvement of a method is disclosed for the preparation of particles of so-called sol-gel material. The improvement consists of avoiding premature precipitation of mixtures of metal salt solutions and ammonia liberating agents by employing a complex forming substance which consists of urea in combination with salicylic acid, substituted salicylic acid, amino sulphonic acid, ethylene glycol, or glycolic acid.

The particles of the sol-gel material produced can be converted by thermal treatment into ceramic nuclear fuel particles.

3,812,050
PRODUCTION OF POROUS CERAMIC NUCLEAR FUEL EMPLOYING DEXTRIN AS A VOLATILE PORE FORMER
Bernard Robert Steele, Watford, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Jan. 12, 1973, Ser. No. 323,229
Claims priority, application Great Britain, Jan. 13, 1972, 1,586/72
Int. Cl. C01g 43/02
U.S. Cl. 252—301.1 R 2 Claims

To produce low density sintered uranium dioxide fuel pellets uranium dioxide powder is mixed with dextrin which is removed during subsequent sintering of pellets formed from the mixture.

3,812,051
DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR THEIR PREPARATION
Kurt Merkle, Hofheim, Taunus, Otto Fuchs and Helmut Tröster, Frankfurt am Main, and Siegfried Noetzel, Mainz, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,355
Claims priority, application Germany, Apr. 14, 1970, P 20 17 765.5
Int. Cl. C09k 1/02
U.S. Cl. 252—301.2 R 4 Claims

Daylight fluorescent pigments on the basis of condensate resins in fluorescent dyestuffs of the benzoxanthane and thio-benzoxanthane series. These daylight fluorescent pigments may be used for preparing fluorescent paints or printing inks and for coloring plastics, especially vinyl polymers. They show an intense bluish green to yellow fluorescence and have a very good fastness to light.

3,812,052
FLUORESCENT COMPOSITION CONTAINING A COUMARONE-INDENE RESIN
Norma Ann Weston, Annandale, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Dec. 18, 1970, Ser. No. 178,526
Int. Cl. C09k 1/00
U.S. Cl. 252—301.2 R 5 Claims

This invention relates to compositions of matter useful for marking and identification purposes comprising a solvent, a fluorescent material and a coumarone-indene resin and a method of marking and identifying objects therewith.

3,812,053
DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM
Siegfried Noetzel, Mainz, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,517
Claims priority, application Germany, Jan. 22, 1971, P 21 02 942.5
Int. Cl. C09k 1/02
U.S. Cl. 252—301.2 R 4 Claims

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and a cross-linked, hydroxyl group containing polyester or a cross-linked copolymer of olefinically unsaturated compounds containing hydroxyl

groups and of olefinically unsaturated compounds free from hydroxyl groups, and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the resin. These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyd resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing. Due to their high resistance to heat, they are particularly suitable for fluorescent dyeing of plastics and enamels.

3,812,054

DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM

Siegfried Noetzel, Mainz, and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,518
Claims priority, application Germany, Feb. 2, 1971, P 21 04 717.6
Int. Cl. C09k *1/02*
U.S. Cl. 252—301.2 R **4 Claims**

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and a cross-linked, hydroxyl group containing polyester or a cross-linked copolymer of olefinically unsaturated compounds containing hydroxyl groups and of olefinically unsaturated compounds free from hydroxyl groups, and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the resin. These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyd resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing. Due to their high resistance to heat, they are particularly suitable for fluorescent dyeing of plastics and enamels.

3,812,055

MIXED ALUMINA DISPERSIONS

Ronald A. Carstens, Anacortes, and William J. Butcher, Vancouver, Wash., assignors to Key Chemicals, Inc., Anacortes, Wash.

Filed Nov. 24, 1971, Ser. No. 201,899
Int. Cl. B01j *13/00*
U.S. Cl. 252—313 **8 Claims**

Mixed alumina compositions comprising positively charged colloidal aqueous dispersions whose solids content comprises 25 to 75% of a first alumina component having an ultimate dispersed particle size no more than about one-fifth as great as a second alumina composition comprising 75–25% of the solids content, and method for their use as anti-slip or pitch control agents in paper manufacturing.

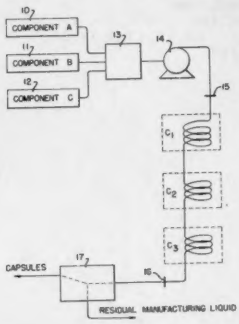
3,812,056

CONTINUOUS ENCAPSULATION

Leandro J. de la Torriente and Victor A. Crainich, Jr., Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed July 5, 1972, Ser. No. 268,989
Int. Cl. B44d *1/02;* **B01j** *13/02*
U.S. Cl. 252—316 **3 Claims**

Continuous encapsulation in a liquid capsule manufacturing vehicle by a process of liquid-liquid phase separation is disclosed. The continuous encapsulation is performed in a capsule manufacturing conduit which has only a single material entrance end and a single material exit end and has a substantially constant cross-sectional shape and area throughout its length. A mixture of all of the components required for encapsulating is continuously fed into one end of the conduit, is passed through the



conduit in turbulent-flow, steady-state, conditions and emerges from the other end of the conduit as a dispersion of minute capsules in the manufacturing vehicle.

3,812,057

REGENERATION OF COBALT-MOLYBDENUM CATALYST USED FOR THE REMOVAL OF DIOLEFINS AND ACETYLENES FROM AN OLEFINIC FEED

Johnathan D. Morgan and Roy A. Ramsey, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,156
Int. Cl. B01j *11/30, 11/02*
U.S. Cl. 252—416 **1 Claim**

A regenerated cobalt-molybdenum catalyst is cooled, contacted with steam and therafter purged with a purging gas for improving the operation of the catalyst.

3,812,058

ACTIVATION OF OLEFIN POLYMERIZATION CATALYSTS

Benny E. Nasser, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,950
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—458 **10 Claims**

A method of activating a moisture-containing composition to produce a composition active as a polymerization catalyst which involves heating the composition to a temperature of maximum moisture release therefrom and then increasing the temperature of the composition to the activation temperature.

3,812,059

PERFUME COMPOSITIONS CONTAINING 6-PROPYL-3-CYCLOHEXENE CARBALDEHYDES

David de Rijke, Naarden, and Harmannus Boelens, Huizen, Netherlands, assignors to Naarden International N.V.

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,127
Claims priority, application Netherlands, Apr. 27, 1971, 7105711
Int. Cl. A61k *7/00;* **C11b** *9/00*
U.S. Cl. 252—522 **8 Claims**

Perfume compositions containing substituted 6-propyl-3-cyclohexene carbaldehydes which are prepared by reacting 2-hexene-1-al with pentadienes or hexadienes by means of a Diels-Alder-reaction.

3,812,060

TOILET BARS

Allan Alsbury, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 84,485, Oct. 27, 1970, which is a continuation of application Ser. No. 868,656, Oct. 22, 1969, which in turn is a continuation of application Ser. No. 618,333, Feb. 24, 1967, all now abandoned. This application Jan. 12, 1972, Ser. No. 217,221

Int. Cl. C11d *1/14*

U.S. Cl. 252—555 3 Claims

A toilet bar consisting essentially of a mixture of C_{10-20} straight-chain primary alkane sulphonate and C_{14-24} alkene sulphonate, the weight ratio of alkane sulphonate to alkene sulphonate being between 4:1 and 2:3. Preferably the alkane sulphonate contains at least 75% by weight of C_{10-16} material and the alkene sulphonate consists predominantly of C_{14-18} material.

3,812,061

METHOD OF PREPARING ANION EXCHANGE RESINS WITH SULFURYL CHLORIDE

James H. Barrett, Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,150

Int. Cl. C08f *27/03*

U.S. Cl. 260—2.1 E 15 Claims

A novel method of preparing anion exchange resins is presented which utilizes the chlorination of vinyl aromatic polymers having pendant methyl groups, e.g., cross-linked poly(vinyltoluene). Sulfuryl chloride is used as the chlorinating agent in the presence of a free radical catalyst. Reaction is highly selective and only trace amounts of ring halogenation are observed.

3,812,062

PRODUCTION OF FOAM PLASTICS FROM HIGH MOLECULAR WEIGHT OLEFIN POLYMERS

Hermann Tatzel, Leutershausen, and Gilbert Beck, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 17, 1972, Ser. No. 253,937

Claims priority, application Germany, May 29, 1971, P 21 26 812.2

Int. Cl. C08f *29/02, 47/10*

U.S. Cl. 260—2.5 E 4 Claims

The production of foam plastics from olefin polymers of high molecular weight whose X-ray crystallinity at 25° C. is more than 50% by weight by mixing the olefin polymer at a temperature which is from 50° to 100° C. above the crystallite melting point of the olefin polymer at a shear rate of from 20 to 200 sec.$^{-1}$ at superatmospheric pressure with an aromatic hydrocarbon, homogenizing the mixture in a zone at a temperature between the crystallite melting point of the olefin polymer and a maximum of 50° C. above the same and at a shear rate of from 500 to 1500 sec.$^{-1}$ with from 5 to 40% by weight of a hydrocarbon and/or halohydrocarbon at a pressure which prevents foaming of the mixture, cooling the resultant homogeneous gel to a temperature which is from 10° to 60° C. below the crystallite melting point of the olefin polymer, and expressing the homogeneous gel into a zone in which a pressure prevails which is below the vapor pressure of the expanding agent in the gel. The products are used as insulation materials and packaging inserts.

3,812,063

POLYESTER PREPOLYMER USEFUL FOR COATING AND A METHOD OF PREPARING THE SAME

Tadasu Kimura and Juichi Kobayashi, Otake, and Hideo Nakamoto, Yamaguchi, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,150

Int. Cl. C08g *39/10*

U.S. Cl. 260—9 29 Claims

A polyester prepolymer which is cross-linkedly hardened by radiation of radioactive energy comprises a backbone chain formed from a non-crystalline polyester of a molecular weight of 300 to 500 having a hydroxyl value of 20 to 200 mg. KOH/g.; and a pendent side chain attached to the backbone chain in a proportion of not lower than 0.5 but not exceeding 7.0 of the side chain with respect to 1,000 molecular weight of the backbone chain and containing at least two ester groups and at least one α,β-olefinically unsaturated group.

3,812,064

POLYANHYDRIDES USEFUL AS FLEXIBILIZING CURING AGENTS FOR EPOXY RESINS

Gus Nichols, Edwardsville, Pa., assignor to General Electric Company

No Drawing. Filed Mar. 15, 1972, Ser. No. 235,027

Int. Cl. C08g *17/16*

U.S. Cl. 260—18 EP 14 Claims

Relates to polyanhydrides suitable for use as flexibilizing curing agents for epoxy resins. Prepared by reacting abietic acid or a dehydrated castor oil fatty acid with maleic anhydride, maleic acid, methyl maleic acid, itaconic anhydride or fumaric acid and a high molecular weight polyoxylene polyol or polyoxylene polyamine.

3,812,065

SURFACE-COATING COMPOSITIONS CONTAINING N-(SUBSTITUTED INDAZOLYL-N^1-METHYL) HEXAMETHYLENETETRAAMONIUM HALIDES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

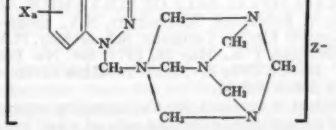
No Drawing. Original application Nov. 22, 1971, Ser. No. 201,178, now Patent No. 3,730,954. Divided and this application Nov. 3, 1972, Ser. No. 303,488

The portion of the term of the patent subsequent to Dec. 11, 1990, has been disclaimed

Int. Cl. C09d *3/64, 3/74, 5/14*

U.S. Cl. 260—22 R 9 Claims

Surface-coating compositions contain as biocide a compound having the structural formula



wherein X represents halogen, nitro, amino, acetamino, or (halobenzylidene)amino; Y represents hydrogen or halogen; Z represents halogen; and *n* represents an integer in the range of zero to 2.

3,812,066

SMOKE SUPPRESSANTS FOR COPOLYMERS OF ETHYLENE AND CHLOROTRIFLUOROETHYLENE

Herman Stone, Convent, Arthur B. Robertson, Succasunna, and Marvin T. Tetenbaum, Convent, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 23, 1971, Ser. No. 156,055

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 XA **4 Claims**

Certain metal-containing organic compounds can be added to ethylene-chlorotrifluoroethylene copolymers to reduce the amount of smoke emitted by the polymer upon exposure to a flame.

3,812,067

STOVING LACQUERS

Themistoklis Katsimbas, Hamburg, Horst Dalibor, Harksheide, and Peter Quednau, Hamburg, Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 229,183, Feb. 24, 1972. This application Apr. 12, 1973, Ser. No. 350,396

Claims priority, application Switzerland, Feb. 26, 1971, 2,866/71; Jan. 25, 1972, 1,057/72

Int. Cl. C08f *15/40*

U.S. Cl. 260—28.5 R **15 Claims**

The present invention relates to stoving lacquers for the coil coating procedure comprising organic solvents and film-forming copolymers of styrene, acrylic acid or methacrylic acid, N-alkoxyalkylacrylic acid amides or N-alkoxyalkylmethacrylic acid amides, hydroxyalkylacrylate or hydroxyalkyl methacrylates, ethylacrylate and methylmethacrylate, the copolymers of which are still soluble in organic solvents and have been produced in a two-step method. These stoving lacquers are used for lacquering rolled tinplate for strips of tin-plate which can be coiled up and shaped and punched by the processor, with the lacquering remaining undamaged even on stretched and punched surfaces (coil coating process).

3,812,068

SOLUTIONS OF RESOL CONDENSATES OF UNSATURATE-RESORCINOL POLYMERS

Robert Lee Wright, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 186,782, Oct. 5, 1971, which is a continuation-in-part of application Ser. No. 159,453, July 2, 1971, which in turn is a continuation-in-part of application Ser. No. 59,720, July 30, 1970, all now abandoned. This application May 22, 1972, Ser. No. 255,851

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **15 Claims**

Unsaturate-resorcinol polymers comprising alkylene-bridged resorcinol units resulting from introducing olefinic unsaturated radicals of 3–10 carbon atoms into the nucleus of the resorcinol are condensed with resol which condensation products are adhesives for bonding textiles material to rubber.

3,812,069

MAKING AQUEOUS SOLVENT MIXTURES OF ALKALI METAL SALT OF POLYAMIDE ACID

Edith M. Boldebuck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,153

Int. Cl. C08g *20/32, 31/24;* **C23b** *13/00*

U.S. Cl. 260—29.2 M **9 Claims**

A method is provided for electrocoating aqueous mixtures of certain polyamide acid salts of alkali metal compounds, resulting from the neutralization of polyamide acid reaction products of organic anhydrides and organic diamines. The aqueous polyamide acid salt mixtures can be in the form of a solution or a dispersion. A method for making such materials also is provided.

3,812,070

COMPOSITION COMPRISED OF A WATER-INSOLUBLE N - METHYLOL-AMIDE-ACRYLIC ACID ESTER COPOLYMER WITH A POLYALKYLENE GLYCOL

Louis E. Kelley, Wyncote, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation of applications Ser. No. 36,499, May 11, 1970, now abandoned, and Ser. No. 182,877, Sept. 22, 1971. This application Dec. 16, 1971, Ser. No. 208,971

Int. Cl. C08f *29/50, 45/26*

U.S. Cl. 260—29.4 UA **9 Claims**

Fibers in non-woven fibrous products are bonded together by a binder comprising the heat-cured product of a water insoluble copolymer of (i) an N-methylolamide which is N-methylolacrylamide or N-methylolmethacrylamide, and (ii) an acrylic acid ester of acrylic acid or methacrylic acid and a C_1 to C_8 alkanol, modified with (iii) a polyalkylene glycol of the formula

$$HO—(RO)_n—H$$

wherein R is an alkylene group of 2 to 6 carbon atoms and *n* is a number having an average value of 4 to 50. Preferred acrylic acid esters are ethyl acrylate and butyl acrylate, and the preferred polyalkylene glycol is a polyethylene glycol characterized by a molecular weight in the range of 300 to 2000. The copolymer may also contain units derived from unsaturated aliphatic carboxylic acids. Preferably the copolymer contains units derived from itaconic acid. The itaconic acid stabilizes aqueous dispersions of the copolymer and adds stiffness to the treated fibrous products without detracting from resilience and solvent resistance.

3,812,071

METHOD OF MANUFACTURING HYDROGELS

Artur Stoy, Prague, Czechoslovakia, assignor to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,495

Claims priority, application Czechoslovakia, Sept. 8, 1970, 6,148/70

Int. Cl. C08f *1/86, 45/24*

U.S. Cl. 260—29.6 TA **6 Claims**

Strong, elastic hydrogels are made by copolymerizing acrylonitrile or methacrylonitrile or mixtures thereof with co-monomers having hydrophilic side-groups, such as acrylamide, methacrylamide, acrylic acid, methacrylic acid and vinyl pyrrolidone or with mixtures of such co-monomers. The copolymerization is carried out in presence of free radicals and in an inorganic solvent which does not undergo any substantial chain transfer such as concentrated aqueous zinc chloride solution or nitric acid.

3,812,072

PROCESS FOR THE PREPARATION OF PAPER COATING COMPOSITIONS

Alfred Kühlkamp and Karl Josef Rauterkus, Kelkheim, Taunus, Horst Schaefer, Schwalbach, Taunus, and Detlev Seip, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,311

Claims priority, application Germany, Feb. 16, 1971, P 21 07 287.7

Int. Cl. C08f *37/18*

U.S. Cl. 260—29.6 RW **4 Claims**

In paper coating compositions, synthetic resin dispersions of the basis of vinyl acetate/ethylene copolymers

which may contain a minor proportion of further comonomers, such as acrylic acid esters or amides, dienes, cross-linking agents, can be combined with water-soluble binders, such as starch, casein, and polyvinyl alcohol. This is achieved by adding to the dispersions after the polymerization, or to any one of the components of the coating composition in the course of its preparation, a non-ionic wetting agent which is a polyethylene oxide or a polypropylene oxide, or block copolymer of ethylene oxide and propylene oxide, or an oxethylated alkyl phenol or alcohol or acid, or a graft polymer of vinyl acetate and certain other monomers on polyethylene oxide. The resulting coating compositions exhibit a high pigment content at a relatively low viscosity.

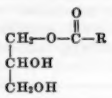
3,812,073

PROCESS FOR PRODUCING VINYL CHLORIDE RESIN

Ikoh Ito, Takeshi Sekihara, Tomoyuki Emura, and Takeshi Ueda, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,661
Claims priority, application Japan, Mar. 2, 1972, 47/21,780, 47/21,781
Int. Cl. C08f *45/32, 47/00*
U.S. Cl. 260—30.4 R **9 Claims**

An antistatic vinyl chloride resin is produced by subjecting vinyl chloride, or a mixture thereof with a minor amount of ethylenically unsaturated monomers copolymerizable therewith, to an aqueous suspension polymerization in the presence of 1 to 5% by weight, based on the weight of said monomer or the mixture thereof, of a monoglyceride represented by the general formula,



wherein R is a saturated or unsaturated hydrocarbon residue having 13 to 19 carbon atoms, or 1 to 5% by weight of the said monoglyceride and 0.01 to 5% by weight of a plasticizer, based on the said monomer or the mixture thereof. The vinyl chloride resin thus obtained is excellent in processability and thermal stability.

3,812,074

PRE-FABRICATED GEL COATS

Stanley Oswitch, University Heights, and Kevin K. Kipp, Cleveland Heights, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 199,752, Nov. 17, 1971, which is a continuation of application Ser. No. 43,213, June 3, 1970, now abandoned. This application Jan. 8, 1973, Ser. No. 321,584
Int. Cl. C08g *51/38, 51/16, 41/04*
U.S. Cl. 260—31.8 M **10 Claims**

A pre-fabricated gel coat is disclosed in the form of a dry sheet that can be easily handled and preshaped as for lining a mold. The pre-fabricated gel coat comprises a layer of partially cured, curable, thermosetting polyester resin, and a fibrous reinforcing medium of thermoplastic fibers. The fibers have a softening temperature no higher than that of a heating operation to which the gel coat is to be subjected such as a molding operation. When heated, the partially cured resin and the thermoplastic fibers soften to permit the gel coat to flow and accommodate itself to a desired, nonplanar configuration with subsequent final cure of the thermosetting polyester resin in the desired nonplanar configuration. Preferably, the gel coat is used to line a mold in which a heat-settable resin and curable polyester resin may be cured substantially simultaneously to form a product of the heat-settable resin having a covering of the gel coat. Simultaneous cure of a heat-settable resin and the gel coat within a mold avoids the messiness and nonuniform thickness resulting from brushing or spray coating molds prior to molding and considerably reduces the time required for the total molding operation. The thermosetting polyester resin preferably contains an unsaturated cross-linker that is solid at room temperatures to facilitate retention of a dry form for the pre-fabricated gel coat. The thermoplastic fibers comprise a resin compatible with the thermosetting polyester resin of the gel coat, such as a thermoplastic, saturated polyester resin.

3,812,075

PROCESS FOR THE PRODUCTION OF A DISPERSION OF A POLYMER IN AN ORGANIC LIQUID

Marion Burdett, Wokingham, and Derek John Walbridge, Beaconsfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,206
Int. Cl. B01f *3/12*; C08f *45/28, 47/20*
U.S. Cl. 260—33.60 A **7 Claims**

A dispersion of a polymer of one or more vinyl or vinylidene monomers in a non-solvent organic liquid is stabilized by carrying out the polymerization of the monomers in the liquid in the presence of a stabilizer precursor obtained by alkylating a melamine formaldehyde resin and reacting it with a reagent having a double bond copolymerizable with the monomer and also having a group capable of undergoing a condensation reaction with the melamine formaldehyde resin.

3,812,076

METHOD OF ADDING SMALL AMOUNTS OF SOLID PARTICULATE ADMIXTURES TO HYDRAULIC CEMENT COMPOSITIONS

Robert W. Previte, Lawrence, and David Chin, Charlestown, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,839
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 AL **15 Claims**

Low addition rate, hygroscopic, difficult-to-dissolve, solid particulate admixtures for hydraulic cement compositions (e.g. polymers of ethylene oxide) are incorporated in the cement composition by a process wherein the desired amount to be added is first measured, the measured quantity introduced (e.g. by siphoning) to a moving confined stream of gas such as air which is under pressure to form a solid-gas mixture, transferring the solid-gas mixture to a mixing zone which is under a lower pressure, and releasing the mixture into the mixing zone along with at least one other component of the cement composition, preferably the aggregate component.

3,812,077

FIBER REINFORCED COMPOSITE MATERIALS

Stanley Y. Hobbs, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,500
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R **19 Claims**

Crystalline polymer-fiber composites are disclosed in which the polymer crystallites are oriented in planes perpendicular to the fiber axis. Also disclosed is a method of making the crystalline polymer-fiber composite by coating the fibers with a nucleating agent for the polymer, forming a mixture of the polymer and the coated fibers, and then molding the polymer and coated fiber mixture at a temperature above the melting point of the polymer and cooling the composite to nucleate and crystallize the polymer in planes perpendicular to the fiber axis.

3,812,078

PLASTIC MATRIX AND RESIN COMPOSITION USED FOR PREPARING SAME

Yasuyuki Takimoto, Takatsuki, and Toshikazu Yoshikawa, Hirakata, Japan, assignors to Nippon Paint Co., Ltd., Osaka-fu, Japan

No Drawing. Filed Feb. 16, 1972, Ser. No. 226,942

Int. Cl. C08f *45/04, 45/06*

U.S. Cl. 260—42.29 2 Claims

A plastic matrix prepared by shaping a resin composition comprising (a) a thermosetting polymerizable modified 1,2-polybutadienediol resin, (b) at least one lower temperature decomposable polymerization catalyst, (c) at least one higher temperature decomposable polymerization catalyst and (d) a filler into a sheet, molding the resulting sheet while contacting with an original plate and, after removal of the original plate completing the curing of the molded sheet. The plastic matrix can be molded at a relatively low temperature for a comparatively short time so that the original plate is not damaged or deformed even when made of a material being inferior in heat stability.

3,812,079

STABILIZED LINEAR POLYESTERS

Toshimitsu Okutsu, Nobuo Tsuji, Reiichi Ohi, and Tokiharu Kondo, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

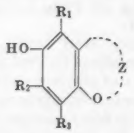
No Drawing. Filed Feb. 29, 1972, Ser. No. 230,504

Claims priority, application Japan, Mar. 3, 1971, 46/11,076

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.8 A 12 Claims

A polyester composition comprising a polyester which is the reaction product of terephthalic acid as the predominant acid component and ethylene glycol as the predominant glycol component and a compound represented by the general formula (I),



(I)

wherein R_1, R_2 and R_3 are the same or different and represent a hydrogen atom, an alkyl radical or a phenyl radical, with the proviso that all of R_1, R_2 and R_3 are not simultaneously hydrogen atoms, and wherein Z represents a methylene chain containing 2 or 3 carbon atoms, said methylene chain being both unsubstituted or substituted is disclosed.

3,812,080

NICKEL AND COBALT DICYCLOHEXYLDITHIOPHOSPHINATES AS FLAME-RETARDANTS FOR STYRENE POLYMERS

Allan Murray Feldman, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 11, 1973, Ser. No. 359,389

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 R 6 Claims

Nickel and cobalt dicyclohexyldithiophosphinates have been found to be excellent flame-retardant additives for styrene polymers. Styrene polymers containing these additives and a method for the flame-proofing of styrene polymers with said additives, are disclosed.

3,812,081

QUATERNARY AMMONIUM SALT CATALYST

William E. Dennis and George E. Vogel, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed May 3, 1973, Ser. No. 357,044

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R 6 Claims

Organosilicon resins containing silicon-bonded hydroxyl groups are cured by heating with quaternary ammonium salts of strong acids. This type of catalyst is latent in that there is little or no coasting or curing of the resin at room temperature and only slow curing under 100° C. For example, a molding compound based on a phenylmethyl silicone resin is cured by heating with benzyltriethyl ammonium chloride at a temperature of 170° C. The catalyzed resin has a shelf life of more than one year at room temperature.

3,812,082

COMPLIANT POLYIMIDES

Robert J. Jones, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 147,596, May 27, 1971. This application Dec. 18, 1972, Ser. No. 315,786

Int. Cl. C08g *20/32*

U.S. Cl. 260—49 3 Claims

A compliant polyimide having superior thermo-mechanical properties can be produced by reacting amine or isocyanate terminated polyaliphatic ethers with an aromatic tetracarboxylic acid or dianhydride. These polyimides display a long term thermo-oxidative stability and a high percent elongation to break, and they are suitable for use as films, fibers, coatings, adhesives, structures, and sealants.

3,812,083

THERMOSETTING PERHALOGENATED POLYMERS

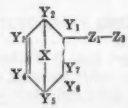
Robert J. Jones, Hermosa Beach, and Eugene A. Burns, Palos Verdes Peninsula, Calif., assignors to TRW Inc., Redondo Beach, Calif.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,771

Int. Cl. C08f *15/04, 15/06*

U.S. Cl. 260—63 UY 10 Claims

Resins having excellent thermal and chemical stability can be made by curing chemically stable alicyclic endo end capped prepolymers. The prepolymers can be made by end capping an aromatic or aliphatic perhalogenated polymer with an alicyclic endo compound having the formula:



wherein Y_1–Y_7, inclusive, can be hydrogen, halogen, nitro, aryl, alkyl, alkyl ether, or alkyaryl; X can be carbonyl, oxygen, sulfur, methylene, halogen substituted methylene, alkyl substituted methylene, or aryl substituted methylene; Z_1 can be an arylene or an alkylene or halogen substituted alkylene group having 0 to 4 carbon atoms; and Z_2 is a vinyl or substituted vinyl. The end capping compounds are synthesized by reacting a cyclo diolefin with an olefinic compound according to a Diels-Alder reaction.

3,812,084

GLYOXALATED 2-VINYL-1-CYCLOAMIDINE-PROPIONAMIDE POLYMERS

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Division of application Ser. No. 107,586, Jan. 18, 1971, now Patent No. 3,772,259. Continuation-in-part of applications Ser. No. 471,463, July 12, 1965, now abandoned, and Ser. No. 745,485, July 17, 1968, now Patent No. 3,556,932. This application May 11, 1973, Ser. No. 359,390

Int. Cl. C08g *20/40*

U.S. Cl. 260—67 R 2 Claims

Water-soluble cationic substantially linear polymers which consist essentially of 2-vinyl-1-cycloamidine-propionamide linkages are effective flocculants for solids suspended in aqueous state. When carrying a sufficient number of glyoxal substituents to be thermosetting, the polymers are wet-strengthening agents for paper. Wet strength paper made by use of this polymer loses about half of its wet strength on normal wet weathering, thus alleviating the litter problem.

3,812,085

AROMATIC POLYAMIDE COMPOSITIONS CONTAINING AROMATIC SULFONIMIDE HAVING AN AFFINITY FOR BASIC DYES

Gerhard Dieter Wolf, Dormagen, Günter Blankenstein, Stommeln, and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 9, 1971, Ser. No. 161,285
Claims priority, application Germany, July 11, 1970, P 20 34 477.8

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 R 7 Claims

Polyamide compositions comprising an aromatic polyamide and an aromatic disulphonimide compound. The polyamide compositions are useful for the production of readily basic dyeable fibres.

3,812,086

PROCESS FOR POLYMERIZING VINYL CHLORIDE

Roy E. Stack, Bethel Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,302

Int. Cl. C08f *3/30, 15/08, 15/30*

U.S. Cl. 260—87.1 7 Claims

Vinyl chloride is polymerized in the presence of trichloroethylene containing from 0.0001–0.5 weight percent of a phenolic compound, such as hydroquinone monomethyl ether. The resin produced does not discolor excessively when subjected to heat.

3,812,087

VULCANIZATION OF EPDM ELASTOMERS

Jean-Paul Dillenschneider, Beaumont, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 114,389, Feb. 10, 1971. This application Feb. 11, 1972, Ser. No. 225,624
Claims priority, application France, Feb. 10, 1970, 7004742

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 C 6 Claims

Vulcanizates of EPDM elastomers having good bonding strength when directly bonded to metal parts, such as brass-plated steel cables used in automobile tires, are obtained from vulcanizable compositions comprising an EPDM elastomer, sulfur, zinc oxide or cadmium oxide and either a directly added or, preferably, an in situ prepared dialkyl dithiocarbamate of a metal of Group 1*a* or Group 2*a* of the Mendeleev Periodic Table.

3,812,088

POLYMERIZATION OF VINYL AROMATIC COMPOUNDS

Donald Alfred Bennett, Beaulieu, England, assignor to The International Synthetic Rubber Company Limited, Southampton, England

Filed Nov. 30, 1971, Ser. No. 203,292
Claims priority, application Great Britain, Dec. 10, 1970, 58,757/70

Int. Cl. C08f *7/02, 7/04*

U.S. Cl. 260—93.5 R 24 Claims

A process for the anionic polymerization of at least one vinyl aromatic monomer selected from styrene and hydrocarbyl substituted styrenes comprising polymerizing the monomer in the presence of a catalyst comprising a metal of Group 1–A of the Periodic Table or a hydride or hydrocarbyl thereof characterized in that the feedstock for the polymerization is the hydrocarbon effluent of a dehydrogenation reaction comprising at least 5% by weight of said monomer and in that at least a proportion of the heat of polymerization is retained in the reaction mixture whereby the temperature of the mixture is caused to rise and is for at least part of the reaction time in excess of 100° C.

3,812,089

PRODUCTION OF OLEFIN POLYMERS

Kijuro Tashiro, Masuzo Yokoyama, and Shoji Kitazume, Ami-machi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,434
Claims priority, application Japan, Dec. 28, 1969, 45/105,108

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—93.7 4 Claims

At least one olefin is polymerized by contact with a catalyst comprising a combination of (1) a reaction product insoluble in hydrocarbons, prepared by reacting the two essential components of a Ziegler-type catalyst and at least one metal halide compound and (2) an organic metal compound of a metal of Group I, II, or III of the Periodic Table. The above metal halide compound is a halide of Li, K, Ca, Fe, Ga, Zr, Mo, Rh, Ag, Sn, Sb, Ba, La, Ce, Hf, Au, Tl, or Th.

3,812,090

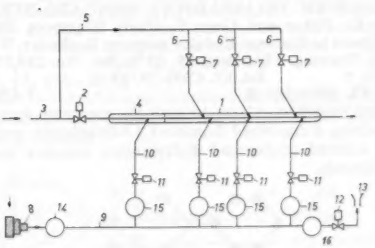
PROCESS FOR PERFORMING GAS-PHASE REACTIONS UNDER PRESSURE

Henning Peters, Brugge, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

Filed Aug. 30, 1972, Ser. No. 285,035
Claims priority, application Germany, Apr. 3, 1971, P 21 16 374.6

Int. Cl. C08f *1/60, 3/04*

U.S. Cl. 260—94.9 R 3 Claims



A mixture of gaseous initiator and carrier gas is fed directly to a closed reactor, at points suitable for initiating and maintaining the gas-phase reaction in the reactor. The rate of injection of such mixture at each point

is controlled in accordance with the temperature in the reactor at such point, to maintain a constant temperature at such point.

3,812,091

D-ANALOGS OF SECRETIN

Miguel A. Ondetti, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 811,259, Mar. 27, 1969. This application May 25, 1972, Ser. No. 256,952

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **2 Claims**

Analogs of the gastrointestinal hormone secretin wherein the 1-His and optionally the 2-Ser, 6-Phe, 12-Arg, 14-Arg, 18-Arg, or 21-Arg is replaced by the corresponding D-amino acid possess secretin-like activity and are useful as antacids in hyperacidic conditions of the stomach and duodenum. The compounds of the invention are resistant to enzymes which degrade secretin.

3,812,092

INTERMEDIATES IN THE PREPARATION OF SECRETIN

Miklos Bodanszky, Princeton, Miguel A. Ondetti, Highland Park, Malcolm H. von Saltza, Millstone, and Venkatachala L. Narayanan and Seymour D. Levine, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 736,880, Apr. 12, 1968, which is a division of application Ser. No. 553,290, May 27, 1966, now Patent No. 3,400,118. This application Oct. 20, 1970, Ser. No. 82,510

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **5 Claims**

This invention relates to intermediates and their salts useful in the preparation of the gastrointestinal hormone, secretin. The intermediates of this invention comprise partial sequences of amino acids which, when combined, form the secretin molecule. The novel protective peptides corresponding to these partial sequences are:

(1) Protected L-histidyl-L-seryl-L-aspartglyglycine; (amino acids 1 to 4);
(2) Protected L-threonyl-L-phenylalanyl-L-threonyl-L-serine hydrazide; (amino acids 5 to 8);
(3) Protected L-glutamyl-L-leucyl-L-seryl-L-arginyl-L-leucine hydrazide; (amino acids 9 to 13); and
(4) Protected L-arginyl-L-aspartyl-L-seryl-L-alanyl-L-arginyl-L-leucyl-L-glutaminyl-L-arginyl-L-leucyl-L-glutaminylglycyl-L-leucyl-L-valinamide; (amino acids 14 to 27).

3,812,093

CATIONIC THIADIAZOLYL MONOAZO DYES

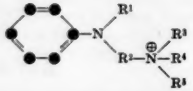
John G. Fisher and Gary T. Clark, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 29, 1972, Ser. No. 284,531

Int. Cl. C09b *29/08*

U.S. Cl. 260—146 R **7 Claims**

This invention relates to cationic monoazo dyestuffs containing a diazotized 2-amino-1,3,4-thiadiazole coupled with selected quaternized dialkylaniline couplers having the formula



wherein

R^1 represents hydrogen; alkyl; alkyl substituted with cyano, phenyl or alkoxy; phenyl or phenyl substituted with alkyl or alkoxy;

R^2 represents alkylene, cycloalkylene, or alkylene-NHCO-alkylene;

R^3, R^4, and R^5 may be the same or different and each represents lower alkyl; and

A represents a basic dye anion.

These dyes impart fast orange to bluish-red shades to acrylic, modacrylic and acid-modified polyester and polyamide fibers.

3,812,094

TERTIARY ALIPHATIC ALPHA-(IMIDO)AZO COMPOUNDS

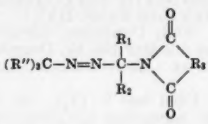
Ronald Edward MacLeay, Williamsville, Harold Carl Lange, Grand Island, and Chester Stephen Sheppard, Tonawanda, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 725,180, Apr. 29, 1968, which is a continuation of application Ser. No. 616,158, Feb. 15, 1967, which in turn is a continuation of application Ser. No. 409,306, Nov. 5, 1964, all now abandoned. This application Nov. 9, 1970, Ser. No. 88,120

Int. Cl. C07c *107/02*

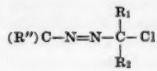
U.S. Cl. 260—152 **8 Claims**

Novel t-aliphatic α-(imido) azo compounds:



(I)

processes for preparing I by reacting t-aliphatic α-(chloro) azo compounds:



(II)

with salt or salt solutions of imides; and the use of compounds I as polymerization initiators for vinyl monomers and as curing agents for resins. For example, 2-t-butylazo-2-phthalimidopropane is prepared by reacting potassium phthalimide and 2-t-butylazo-2-chloropropane; and the product is used to cure an unsaturated polyester/styrene resin at 115° C. and to polymerize styrene at 115° C.

3,812,095

COMPOUNDS HAVING PEROXY AND ALIPHATIC AZO GROUPS AND METHODS USING THESE AS INITIATORS

Chester Stephen Sheppard, Tonawanda, and Ronald Edward MacLeay, Williamsville, N.Y., and Richard Anthony Bafford, Aiken, S.C., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 703,241, Feb. 6, 1968. This application May 14, 1970, Ser. No. 37,310

Int. Cl. C07c *107/02*

U.S. Cl. 260—192 **9 Claims**

(I) Compounds having independent peroxidic (X) and aliphatic azo groups of the formula

$$[(R\text{—}N{=}N\text{—}R')_m\text{—}X]_n$$

Example: di-t-butylperoxy ester of cis-4,4'-azobis-(4-cyanovaleric acid).

(II) A method of making a block polymer where vinyl monomer is initiated sequentially to produce in one instance: a polymer having azo-carbon linkages present, which is then reacted with vinyl monomer under conditions to rupture the azo-carbon linkages, and in another instance: a polymer having peroxy-carbon linkages present, which is then reacted with vinyl monomer under conditions to rupture the peroxy carbon linkages.

3,812,096

N-DEMETHYLCELESTICETIN DERIVATIVES

Alexander D. Argoudelis, Portage, and John H. Coats and Oldrich K. Sebek, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed June 12, 1972, Ser. No. 261,724
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 R 4 Claims

New antibiotics, N-demethyl-7-O-demethylcelesticetin (IV) and N-demethylcelesticetin (IVa), are produced concomitantly by the controlled fermentation of the new micro-organism *Streptomyces caelestis* strain 22218a in an aqueous nutrient medium. These antibiotics are antibacterially active and also can be converted to various antibacterially active analogues.

3,812,097

AMMONIUM SALTS OF 3β{(2-O-β-D-GLUCOPYRANURONOSYL-α-D-GLUCOPYRANURONOSYL) OXY} OLEAN-12-EN-30-OIC ACID

John S. Baran, Morton Grove, and Barnett S. Pitzele, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 17, 1972, Ser. No. 272,329
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 4 Claims

Ammonium salts of 3β-{(2-O-β-D-glucopyranuronsyl-α-D-glucopyranuronosyl)oxy} olean-12-en-30-oic acid herein described have potent antiarrhythmic activity and they are also useful sweetening agents. These substances are prepared from the monoammonium salt of 3β-{(2-O-β-D-glucopyranuronosyl-α-D-glucopyranuronosyl)oxy} olean-11-oxo-12-en-30-oic acid by conversion of the 11-oxo function to an 11-methylene function. The reduction is followed by replacement of the carboxylic acid hydrogens with the ammonium ion under appropriate condition to provide hydrated ammonium salts. Alternately, the reduced monoammonium salt is acidified to form the triacid. The triacid is then made anhydrous and converted to the anhydrous mono, di, and tri-ammonium salts.

3,812,098

O²,2'-ANHYDRO-1-(β-D-ARABINOFURANOSYL)-CYTOSINE DERIVATIVES AND METHODS OF MAKING AND RELATED PROCEDURES

John G. Moffatt, Los Altos, and Alan F. Russell, San Francisco, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 21,206, Mar. 19, 1970, now Patent No. 3,709,874. This application Mar. 3, 1972, Ser. No. 231,711
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 15 Claims

5'-O-dioxolanyl derivatives of O²,2'-anhydro-1-(3'-O-acyl-β-D-arabinofuranosyl) - cytosines; methods of preparing such compounds, methods of selectively cleaving the 5'-O-dioxolanyl or 3'-O-acyl group from such derivatives and methods of preparing 1-(β-D-arabinofuranosyl)-cytosines. The aforementioned compounds are prepared and isolated as pharmaceutically acceptable salts. The 3'-O-acyl-5'-O-dioxolanyl derivatives are prepared by treating the corresponding cytosine ribonucleosides with an α-acyloxy acyl halide. The 3'-O-acyl-5'-O-dioxolanyl derivatives are converted to the corresponding O²,2'-anhydro-1-(3' - O - acyl-β-D-arabinofuranosyl)-cytosines and/or O²,2'-anhydro - 1 - (β-D-arabinofuranosyl)-cytosines by selective acid hydrolysis. The aforementioned 5'-O-dioxolanyl derivatives can also be converted to the corresponding 1-(β-D-arabinofuranosyl) - cytosines by basic hydrolysis. The aforementioned compounds and salts exhibit anti-viral and cytotoxic activity and are useful for the treatment of mammals where such agents are indicated.

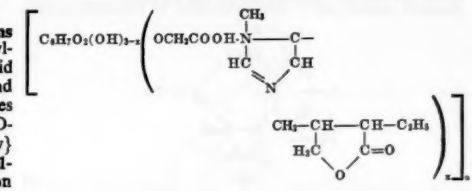
3,812,099

POLYMER DERIVATIVE OF 1-METHYL-5/5-OXO-4-ETHYL-TETRAHYDROFURYL - (3) - METHYL/IMIDAZOLE WITH CELLULOSE GLYCOLIC ACID

Nadezhda Alexandrovna Kashkina, ulitsa Talsu 99/11, kv. 22; Milda Yanovna Pormale, ulitsa Suvorova 104, kv. 10; Arvid Yanovich Kalninch, ulitsa Sverdlova 8, kv. 3; Yanis Shusters, ulitsa Kveles 15, korpus 4, kv. 30; Guna Robertowna Dambite, ulitsa Gorkogo 37, kv. 20; Ipatiya Marcewna Reinberg, ulitsa Pumpura 5, kv. 8; Idea Wladimirowna Walkowa, ulitsa Mersroga 7, kv. 2; Wiya Aleksandrowna Tipaine, ulitsa Juglas 53, kv. 10; Antons Petrowich Skutells and Stanislaws Kazimirowich Yankowskis, both of ulitsa Marupes 17, kv. 32; and Inese Petrowna Olina, ulitsa Lachplesha 36, kv. 21, all of Riga, U.S.S.R.

No Drawing. Continuation of application Ser. No. 68,009, Aug. 28, 1970. This application June 23, 1972, Ser. No. 265,693
Int. Cl. C08b *11/14, 15/06*
U.S. Cl. 260—213 3 Claims

The present invention relates to a new compound which is a polymer derivative of 1-methyl-5-/5-oxo - 4 - ethyl-tetrahydrofuryl - (3) - methyl/-imidazole with cellulose glycolic acid of the general formula



where x is substitution degree from 75 to 100, n is polymerization degree from 30 to 120. The method of the invention for producing said polymer derivative of 1-methyl - 5 - /5 - oxo - 4 - ethyl - tetrahydrofuryl-(3)-methyl/-imidazole with cellulose glycolic acid consists in that 1-methyl-5-/5-oxo - 4 - ethyl-tetrahydrofuryl-(3)-methyl/-imidazole is reacted with cellulose glycolic acid in an aqueous medium, and the desired product is subsequently isolated. Said compound is an active principle of a medicinal preparation featuring M-cholinomimetic action.

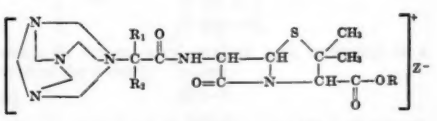
3,812,100

6-[(3,5,7 - TRIAZA - 1-AZONIA-1-ADAMANTYL) ACETAMIDO]PENICILLANIC ACID HALIDES AND SULFONATES

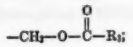
Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,692
The portion of the term of the patent subsequent to Mar. 13, 1990, has been disclaimed
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 7 Claims

New 6-[(3,5,7-triaza-1-azonia-1-adamantyl)acetamido] penicillanic acid halides and sulfonates of the following general formula



wherein R is hydrogen, lower alkyl, aralkyl or the group



R_1 is hydrogen, lower alkyl, cyclo-lower alkyl, unsaturated cyclo-lower alkyl, aryl, aralkyl, adamantyl, cyclo-heptatrienyl or a heterocyclic group; R_2 is hydrogen or lower alkyl; R_3 is lower alkyl, aryl or aralkyl and Z is a halogen or sulfonate group; are useful as antibacterial agents.

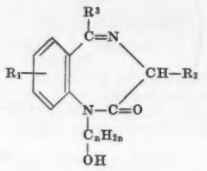
3,812,101

NOVEL PROCESS FOR PREPARING I-SUBSTITUTED BENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya, Shigeho Inaba, Takarazuka, Toshiyuki Hirohashi, Ashiya, Michihiro Yamamoto, Toyonaka, Kikuo Ishizumi and Mitsuhiro Akatsu, Ikeda, Isamu Maruyama, Minoo, Yoshiharu Kume, Takarazuka, Kazuo Mori, Kobe, and Takahiro Izumi, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

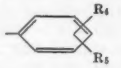
No Drawing. Filed June 14, 1971, Ser. No. 153,030
Claims priority, application Japan, June 30, 1970, 45/57,650
The portion of the term of the patent subsequent to Dec. 11, 1990, has been disclaimed
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **4 Claims**

Novel process for preparing 1-substituted benzodiazepine derivatives represented by the formula

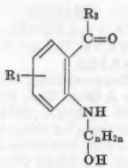


(I)

wherein R_1 represents hydrogen, halogen, nitro, C_1–C_4 alkoxy, trifluoromethyl or cyano; R_2 represents hydrogen, C_1–C_4 alkyl, phenyl or aralkyl; R_3 represents pyridyl or a group of the formula,

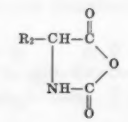


(where R_4 and R_5 are independently hydrogen, halogen, C_1–C_4 alkyl, trifluoromethyl or cyano); and n represents an integer of 1 to 4, which comprises reacting an aminophenylketone derivative represented by the formula,



(II)

wherein R_1, R_3 and n are the same as defined above, with an oxazolid-2,5-dione derivative represented by the formula



(III)

wherein R_2 is the same as defined above.

The 1-substituted benzodiazepine derivatives represented by the formula (I) have prominent effects as tranquilizer, muscle relaxant, antispasmodic, anticonvulsant and hypnotic.

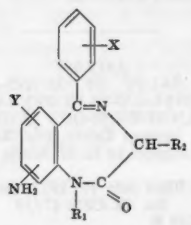
3,812,102

PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES

Kikuo Ishizumi, Ikeda, Kazuo Mori, Kobe, Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

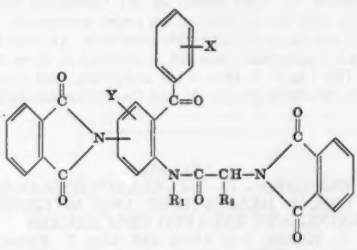
No Drawing. Filed Aug. 16, 1971, Ser. No. 172,299
Claims priority, application Japan, Aug. 25, 1970, 45/74,702
Int. Cl. C07d *53/06*
U.S. Cl. 2o0—239.3 D **3 Claims**

A novel process for producing benzodiazepine derivatives represented by the formula,



(I)

wherein R_1 is a hydrogen atom, or a lower alkyl or cycloalkylmethyl group, R_2 is a hydrogen atom or a lower alkyl group, X and Y are individually hydrogen or halogen atoms or lower alkyl groups, or acid salts thereof, which comprises reacting a diphthalimidobenzophenone derivative represented by the formula,



(II)

wherein R_1, R_2, X and Y are the same as defined above, with a hydrazine derivative to obtain the benzodiazepine derivatives of the formula (I).

The benzodiazepine derivatives represented by formula (I) have excellent effects as sedatives, muscle-relaxant, anti-spasmodics, and hypnotics.

3,812,103

2,3-DIHYDRO-1,4-BENZODIAZEPINES

Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 11, 1967, Ser. No. 629,934
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **9 Claims**

1,4-Benzodiazepines which are substituted in the 1-position with a carboxamide or thiocarboxamide radical and methods for their preparation. The 1,4-benzodiazepines which are substituted in the 1-position with a thiocarboxamide radical are useful as an anticonvulsant, whereas the 1,4-benzodiazepines which are substituted in the 1-position with a carboxamide radical are useful as muscle relaxants, psychosedatives, hypnotics, sedatives, anticonvulsants, and analgesics.

3,812,104
5-ARYLSULFAMYL-ANTHRANILIC ACIDS

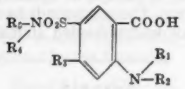
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 157,046, June 25, 1971, which is a continuation-in-part of application Ser. No. 149,027, June 1, 1971, both now abandoned, which is a continuation-in-part of application Ser. No. 91,224, Nov. 19, 1970, which is a continuation-in-part of application Ser. No. 832,029, June 10, 1969, now Patent No. 3,658,990, dated Apr. 25, 1972, which is a continuation-in-part of abandoned application Ser. No. 675,330, Oct. 16, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 598,980, Dec. 5, 1966. This application July 29, 1971, Ser. No. 167,531

Int. Cl. C07d *5/16*

U.S. Cl. 260—239.6 **6 Claims**

5-arylsulfamyl-4-halo-anthranilic acids, e.g. those of the formula



R_1=aliphatic or araliphatic radical

$R_{2,4}$=H or R_1

R_3=Cl or Br

R_5=carbo- or heterocyclic aryl

and functional derivatives thereof, exhibit diuretic effects.

3,812,105
19-NOR-PROGESTERONE DERIVATIVES

Arthur F. Marx and Hermanus J. Kooreman, Delft, Netherlands, assignors to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V., Delft, Netherlands

No Drawing. Continuation of abandoned application Ser. No. 856,475, Sept. 9, 1969. This application Apr. 21, 1972, Ser. No. 246,215

Claims priority, application Great Britain, Sept. 11, 1968, 43,295/68

Int. Cl. C07c *169/34*

U.S. Cl. 260—239.55 C **17 Claims**

New 14α,17α-alkylidenedioxy- and 14α,17α-benzylidenedioxy-19-nor-progesterone compounds are disclosed. The new compounds possess progestational activity

3,812,106
3β - HYDROXY - 5α-CARDENOLIDES AND -BUFADIENOLIDES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim, Taunus, Kurt Radscheit, Kelkheim, Taunus, Werner Fritsch, Neuenhain, Taunus, and Werner Haede, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

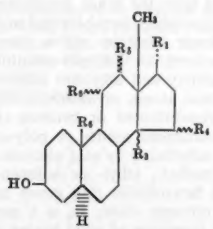
No Drawing. Filed July 6, 1971, Ser. No. 160,220

Claims priority, application Germany, July 7, 1970, P 20 33 599.3

Int. Cl. C07c *173/02, 173/04*

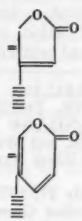
U.S. Cl. 260—239.57 **2 Claims**

A process for the manufacture of 3β-hydroxy-5α-cardenolides and 3β-hydroxy-5α-bufadienolides of the general Formula I



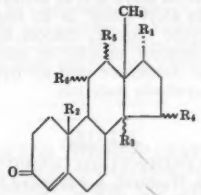
I

in which R_1 represents the butenolide ring or the α-pyrone ring



R_2 represents CH_3, CH_2OH or

R_3 represents a hydrogen atom in α- or β-position or a hydroxy group which may be esterified; R_4 represents a hydrogen atom; or R_3 and R_4 together represent a 14(15)-double bond or an epoxy group in 14,15β- or 14,15α-position; R_5 and R_6 each represents a hydrogen atom or a hydroxy group in α- or β-position which may be esterified, which process comprises reducing 3-oxo-4(5)-dehydro-cardenolides or -bufadienolides of the general formula



in which R_1, R_2, R_3, R_4, R_5 and R_6 have the meanings given above and R_2 may additionally represent the aldehyde group CHO, and R_5 and R_6 may represent the oxo group, with organometallic reducing agents or reducing agents having a similar effect, the reducing power of which are superior to that of sodium boron hydride, in the presence of organic nitrogen bases at temperatures of from −30° to +60° C.

Cardioactive 3β-hydroxy-5α-cardenolides and bufadienolides obtained by this process.

3,812,107
β-HYDROXYALKYLATED HYDRAZONE DYESTUFFS

Gunther Boehmke, Leverkusen-Grossendriesch, and Ernst Schmitt, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

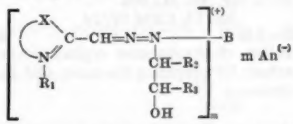
No Drawing. Filed May 2, 1972, Ser. No. 249,649

Claims priority, application Germany, May 4, 1971, P 21 22 038.2

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 G **13 Claims**

Hydrazone dyestuffs of the formula



wherein R_1 denotes alkyl, aralkyl, aryl, cycloalkyl or a radical of the formula

R_2 and R_3 denote hydrogen, alkyl or alkenyl, R_4 and R_5 denote hydrogen, alkyl, alkenyl, alkinyl, aryl, aralkyl or

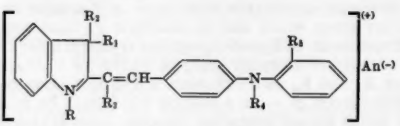
carboxyl, X denotes the residual constituent of a 5-membered or 6-membered heterocyclic ring, B denotes an aromatic or heterocyclic radical, *m* denotes the numbers 1 or 2 and $An^{(-)}$ denotes an anion, are valuble for dyeing and printing of natural and synthetic materials.

3,812,108
CATIONIC DYESTUFFS, THEIR MANUFACTURE AND USE

Alfred Brack, Leverkusen, and Walter Gomm, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 17, 1972, Ser. No. 272,174
Claims priority, application Germany, July 17, 1971, P 21 35 834.9
Int. Cl. C07d *27/38*
U.S. Cl. 260—240.9 **8 Claims**

Cationic dyestuffs of the formula



wherein R denotes an alkyl, aryl or aralkyl group, R_1, R_2 and R_4 denote an alkyl group, or R_1 and R_2 conjointly denote a carbocyclic ring, R_3 denotes hydrogen or an alkyl group, R_5 denotes an alkyl or alkoxy group and $An^{(-)}$ denotes an Anion, are used for dyeing and printing natural and synthetic materials.

3,812,109
SUBSTITUTED INDENYL GLUCORONIDE ESTERS

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 21, 1972, Ser. No. 273,904
Int. Cl. C07d *7/14*
U.S. Cl. 260—240 R **2 Claims**

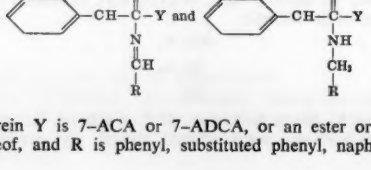
New substituted indenyl esters, anhydrides and salts thereof, which have anti-inflammatory, anti-pyretic and analgesic activity. Also included herein are methods of preparing said indenyl esters and anhydrides pharmaceutical compositions having said indenyl esters and anhydrides as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,812,110
7-(1,4-CYCLOHEXADIENYL-ACYLAMINO) CEPHALOSPORINS

Bong Kuk Lee, Old Bridge, N.J., Dewey D. Y. Ryu, Holliston, Mass., and Gennaro John Miraglia, East Brunswick, Harold I. Basch, Somerset, and Barid B. Mukherjee, East Windsor, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 229,170, Feb. 24, 1972. This application Aug. 21, 1972, Ser. No. 282,096
Int. Cl. C07d *99/24*
U.S. Cl. 260—240 G **8 Claims**

This invention relates to new cephalosporin derivatives and methods for preparing the same, said derivatives having the structure



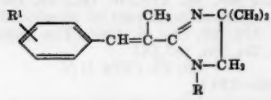
wherein Y is 7–ACA or 7–ADCA, or an ester or salt thereof, and R is phenyl, substituted phenyl, naphthyl, substituted naphthyl, lower alkyl or cycloalkyl. These compounds are useful as antibacterial agents.

3,812,111
IMIDAZOLINE TRANQUILIZING AGENTS

Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

No Drawing. Filed Dec. 4, 1972, Ser. No. 312,077
Int. Cl. C07d *49/34*
U.S. Cl. 260—240 D **5 Claims**

Imidazolines corresponding to the formula



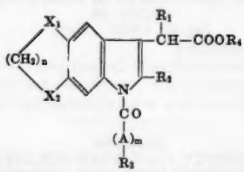
where R is isopropyl, phenyl, or hydroxyethyl and R^1 is hydrogen or chlorine. The compounds have utility as tranquilizing agents for warm-blooded animals.

3,812,112
INDOLYLACETIC ACID DERIVATIVES

Michio Kimura, Minoo, Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,700
Claims priority, application Japan, Aug. 26, 1970, 45/75,198; Aug. 27, 1970, 45/75,818; Oct. 3, 1970, 45/86,964; Dec. 9, 1970, 45/109,768, 45/109,769, 45/109,771; Feb. 15, 1971, 46/6,887; Dec. 16, 1971, 46/7,492
Int. Cl. C07d *27/56*
U.S. Cl. 260—240 J **11 Claims**

Novel indolylacetic acid derivatives, which have excellent anti-inflammatory, antipyretic and analgesic activities, represented by the formula,

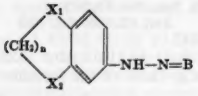


(I)

wherein X_1 and X_2 each is a member selected from the group consisting of oxygen and methylene; *A* is a member selected from the group consisting of unsubstituted saturated hydrocarbon chain having up to 5 carbon atoms, unsubstituted unsaturated hydrocarbon chain having up to 5 carbon atoms and substituted saturated or substituted ethylenically unsaturated hydrocarbon chain having up to 5 carbon atoms, in which the substituents are selected from the group consisting of halogen or phenyl, the hydrocarbon chain being straight or branched one; *m* is 0 or 1; *n* is 1 or 2; R_1 and R_2 each is a member selected from the group consisting of hydrogen and alkyl having up to 4 carbon atoms; R_3 is a member selected from the group consisting of alkyl having up to 4 carbon atoms, unsubstituted or a lower alkyl-, lower alkoxy-, lower alkylthio-, nitro-, cyano-, methylenedioxy-, ethylenedioxy- or halogen-substituted aryl, each of said alkyl, alkoxy and alkylthio substituents containing up to 4 carbon atoms, or unsubstituted, or halogen-, alkyl- or phenyl-substituted or benzene ring-condensed, saturated or unsaturated mono- or poly-alicyclic group, or alkyl group substituted by said alicyclic group, or unsubstituted or methyl-, ethyl- or halogen-substituted 5- or 6-membered heterocyclic ring group containing oxygen, sulfur or nitrogen atom; R_4 is a member selected from the group consisting of alkyl having up to 4 carbon

atoms or hydrogen, or a group of M (wherein M is a cation).

The indolylacetic acid of the formula (I) is prepared by reacting a compound of the formula,



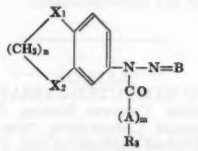
(IV)

wherein X_1, X_2 and n are the same as defined above and B is a member selected from the group consisting of

and Z (wherein Z is a nitrogen protecting system comprising at least one readily removable group), with an acid halide represented by the formula,

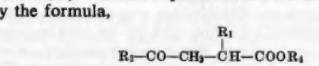
$$R_3—(A)_m—CO—hal \quad (V)$$

wherein R_3, A and m are the same as defined above and hal is halogen, to obtain N^1-acylated compound of the formula,



(II)

wherein X_1, X_2, R_3, A, B, m and n are the same as defined above, then reacting the resultant N^1-acylated compound (II) with an aliphatic acid derivative represented by the formula,



(III)

wherein R_1, R_2 and R_4 are the same as defined above.

3,812,113

SILICON SUBSTITUTED AZASPIRANES

Leonard M. Rice, Columbia, Md., assignor to Geschickter Fund for Medical Research, Washington, D.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 6,561, Jan. 28, 1970. This application Sept. 8, 1971, Ser. No. 178,827

Int. Cl. C07d *27/04*

U.S. Cl. 260—240 R **4 Claims**

Novel azaspiranes containing silicon, their acid addition and bis-quaternary salts, as well as intermediate azaspirodiones. The azaspiranes are particularly useful for their cytotoxic activities.

3,812,114

BENZOTHIAZINES

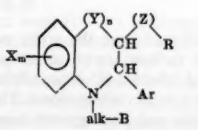
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 29, 1971, Ser. No. 184,954

Int. Cl. C07d *93/10*

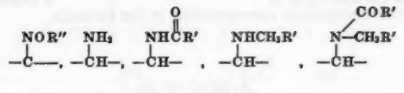
U.S. Cl. 260—243 R **9 Claims**

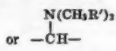
Compounds of the formula



I

wherein X may be hydrogen, halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, hydroxy, alkylthio, haloalkylthio, nitro, alkylsulfonyl, amino, alkanoylamino, or mono- or dialkylamino wherein any of the foregoing alkyl or substituted alkyl radicals may contain up to 8 carbon atoms; m may be 1, 2, 3 or 4; Y may be —S—, —SO—, —SO_2—, n may be 0 or 1; alk may be a straight or branched alkyl radical of up to 6 carbon atoms; B may be a basic nitrogen containing radical; R may be straight or branched alkyl radical of from 1 to 8 carbon atoms, cycloalkyl of from 3 to 8 carbon atoms, or aryl or arylalkyl of from 6 to 10 carbon atoms; Z may be





wherein R'' may be hydrogen, alkyl of from 1–4 carbons or acyl of from 1–4 carbons; R' may be hydrogen or alkyl of from 1 to 4 carbons; Ar may be phenyl, X-substituted phenyl, wherein X is as defined above, pyridyl, thienyl, furyl, naphthyl, or alkylenedioxyphenyl; and pharmaceutically acceptable acid-addition or quaternary ammonium salts thereof and N-oxides and pharmaceutically acceptable acid-addition salts thereof, are useful as anti-inflammatory agents.

3,812,115

PROCESS FOR THE PREPARATION OF 1,8-NAPHTHALDEHYDIC ACID

Henry Bader, Newton Center, and Yunn H. Chiang, Woburn, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Feb. 28, 1973, Ser. No. 336,797

Int. Cl. C07d *7/00*

U.S. Cl. 260—343.2 R **7 Claims**

Naphthaldehydic acid is synthesized by alkaline cleavage at close to room temperature using a solvent system of water and certain aprotic organic solvents.

3,812,116

7-ACYLATED 3-SUBSTITUTED CEPHALOSPORIN COMPOUNDS

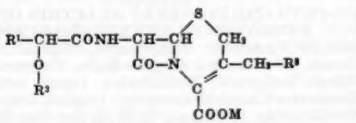
Tadayoshi Takano, Hirakata, Kazuo Kariyone, Kyoto, Masaru Kurita, Takatsuki, Hisatoyo Yazawa and Hitoshi Nakamura, Toyonake, and Mitsunori Hasegawa, Ikeda, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed July 2, 1971, Ser. No. 159,485

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **12 Claims**

Compounds of the formula



(I)

in which

R^1 is hydrogen, lower alkyl, aryl, thienyl or furyl,
R^2 is acyl containing more than one carbon atom,
R^3 is hydrogen, azido or heterocyclic thio, and
M is hydrogen or a pharmaceutically acceptable, substantially non-toxic cation,

have strong anti-bacterial activity and are active on oral administration.

3,812,117
CERTAIN PHOSPHORUS-CONTAINING IMINO OXAZOLIDINES, THIAZOLIDINES AND PERHYDROOXAZINES

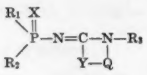
Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Mar. 23, 1970, Ser. No. 22,039, now Patent No. 3,714,176, which is a continuation-in-part of application Ser. No. 705,017, Feb. 13, 1968, which in turn is a continuation-in-part of application Ser. No. 673,993, Oct. 9, 1967, both now abandoned. Divided and this application Oct. 26, 1972, Ser. No. 301,016

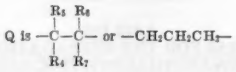
Int. Cl. C07d *93/10*

U.S. Cl. 260—243 R **3 Claims**

New compounds corresponding to the formula



wherein X and Y are independently oxygen or sulfur, R_1 is lower alkyl, lower alkoxy, lower alkylthio; R_2 is lower alkyl, lower alkoxy, lower alkylthio, chloro lower alkyl, carbethoxy methylthio, allylthio, chlorophenylthio, nitrobenzyloxy, phenyl or substituted phenoxy in which said substituents are nitro, cyano, methylthio, chloro or *tert.*-butyl; R_3 is lower alkyl, benzyl, phenyl, lower alkoxyalkyl, alkenyl, chloroalkenyl or 2-propynyl;



in which R_4 is hydrogen, lower alkyl, cyclohexyl or vinyl, R_5, R_6 and R_7 are independently hydrogen or lower alkyl; provided that when Q is $-CH_2CH_2CH_2-$ then R_3 is other than benzyl.

The above-mentioned compounds are biologically effective as pesticides, especially against insects and acarids, and as herbicides. Representative compounds are:

2-[N-(O,O-dimethylphosphonothiono)-amino]-3-ethyl-5-methyl-1,3-oxazolidine,
2-[N-(O,O-diethylphosphonothiono)-imino]-3-ethyl-5-methyl-1,3-oxazolidine,
2-[N-(O,S-dimethylphosphonothiolo)-imino]-3-ethyl-5-methyl-1,3-oxazolidine,
2-(diethylthiophosphinoimino)-3-methyl oxazolidine,
2-(O,O-dimethylthiophosphorylimino)-3-methyl thiazolidine, and
2-(O,O-dimethylthiophosphoryl-imino)-3-allyl-perhydro-1,3-oxazine.

3,812,118
2(1H)-QUINAZOLINONES BY REACTION OF 2-CARBAMOYLINDOLES WITH HALOGEN

Michihiro Yamamoto, Nishinomiya, Shigeaki Morooka, Masao Koshiba, and Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed June 5, 1972, Ser. No. 259,691

Claims priority, application Japan, Oct. 26, 1971, 46/84,861

Int. Cl. C07d *51/48*

U.S. Cl. 260—247.1 **2 Claims**

2(1H)-quinazolinone derivatives are obtained by treating a 2-carbamoylindole derivative with a halogen in the presence of an alkyli. The quinazolinone derivatives have excellent pharmacological actions such as anti-inflammatory, analgesic, uricosuric, diuretic and antiviral actions.

3,812,119
DIBENZOCYCLOHEPTENES

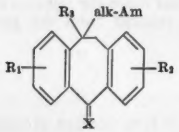
Gordon Northrop Walker, Morristown, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 878,914, Nov. 21, 1969. This application Aug. 28, 1970, Ser. No. 68,037

Int. Cl. C07d *87/40*

U.S. Cl. 260—247 **5 Claims**

10-(1-aminoalkyl)-10,11-dihydro - 5H - dibenzo[a,d] cycloheptenes, e.g. those of the formula



Am=an amino group
alk=lower alkylidene
X=2H, HOH or O
$R_{1,2}$=H, alkyl, alkoxy, alkylmercapto, halo, CF_3, NO_2 or amino
R_3=H, lower alkyl

and salts thereof are antidepressants.

3,812,120
TRISUBSTITUTED-s-TRIAZINES

Logan C. Bostian, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Oct. 24, 1969, Ser. No. 869,378, now Patent No. 3,704,112. Divided and this application July 18, 1972, Ser. No. 272,811

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **1 Claim**

Novel adducts of 2-alkylamino-4-amino-6-chloro-s-triazines with chloroacetaldehydes are prepared by reacting the amino substituted-s-triazine with di- or trichloroacetaldehyde in an inert solvent. Reaction temperatures of 40 to 100° C. for one-half to one hour are preferred. The reaction mixture may be cooled to separate the product; evaporation of the solvent at advanced temperatures should be avoided as this may form undesirable by-products. The products are highly selective herbicides.

3,812,121
TETRAHYDROTHIOQUINAZOLINONES

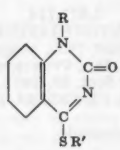
John Paul Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,914

Int. Cl. C07d *51/46*

U.S. Cl. 260—251 A **7 Claims**

Compounds and their preparation of the formula



wherein R is selected from the group consisting of alkyl with from 1–6 carbon atoms, mono- and dihalophenyl and benzyl; and wherein R' is an aliphatic hydrocarbon radical of from 1 to 12 carbon atoms. The compounds are useful as biocides and plant growth regulators.

3,812,122
PROCESS FOR MAKING OXYALKYLATED POLYAMINO-1,3,5-TRIAZINES
Wolfgang Lengsfeld, Limburgerhof, Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Apr. 12, 1972, Ser. No. 243,476
Claims priority, application Germany, Apr. 16, 1971, P 21 18 868.1
Int. Cl. C07d *55/20, 55/24*
U.S. Cl. 260—249.6 **5 Claims**

A process for making oxyalkylated polyamino-1,3,5-triazines wherein the oxyalkylation is carried out at elevated temperatures in the presence of N,N-dialkyl acid amides is disclosed.

3,812,123
U.V.-ABSORBING ORTHO-HYDROXYPHENYL SUBSTITUTED PHENANTHROLINES
Jan-Erik Anders Otterstedt, Simrishamn, Sweden, and Richard Pater, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Feb. 24, 1969, Ser. No. 801,842, now Patent No. 3,660,404. Divided and this application Dec. 13, 1971, Ser. No. 207,617
Int. Cl. C07d *39/14*
U.S. Cl. 260—288 P **5 Claims**

Ultraviolet absorbing phenanthroline of the formula

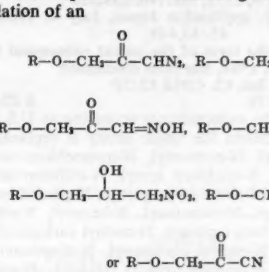
wherein R_{1-3} and R_{5-7} are selected from H, Cl, OH, C_{1-18} alkyl, C_{1-18} alkoxy and C_{1-18} acyloxy, and process for preparing same.

3,812,124
METHOD FOR PREPARING THIAMINE SALTS
Hozumi Tanaka, Ashiya, Kenji Ikawa, Osaka, and Fumitaka Takami, Higashiosaka, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 8,427, Feb. 3, 1970. This application June 2, 1972, Ser. No. 259,303
Claims priority, application Japan, Feb. 25, 1969, 44/14,103
Int. Cl. C07d *99/12*
U.S. Cl. 260—256.6 **1 Claim**

Thiamine salts of high purity are obtained by treating thiamine monothiocyanate with hydrochloric acid or nitric acid and heating the mixture under reduced pressure until the produced hydrogen monothiocyanate is expelled from the reaction mixture.

3,812,125
3-DIAZINYL-4-(3-SECONDARY AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLES
Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada
No Drawing. Application Apr. 21, 1969, Ser. No. 818,090, now Patent No. 3,655,663, which is a continuation-in-part of abandoned application Ser. No. 731,333, May 22, 1968. Divided and this application Sept. 9, 1971, Ser. No. 179,146
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 H **4 Claims**

4-[3-(substituted amino) - 2 - hydroxypropoxy]-1,2,5-thiadiazole compounds, substituted by an N-containing heterocyclic group in the 3-position of the thiadiazole nucleus which exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by one of three principal methods (1) reaction of a 4-hydroxy-1,2,5-thiadiazole with epihalohydrin to provide 4-(3-halo-2-hydroxypropoxy)-1,2,5-thiadiazole which, upon treatment with alkali, forms the epoxide which is then reacted with an amine to provide the desired product; (2) reaction of a 3-chloro (or bromo)-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiadiazole with an N-containing heterocycle that replaces the 3-chloro group; (3) reductive alkylation of an



wherein R is the 1,2,5-thiadiazole-4-yl group.

3,812,126
[1-[4-[3-(p-FLUOROBENZOYL)-PROPYL] - 1 - PIPERAZINYL]-ALKYL] - 3 - ALKYL - 2 - IMIDAZOLIDINONES
Armin Züst, Birsfelden, Basel-Land, and Walter Schindler, deceased, by Leonhard Gysin, executor, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Dec. 1, 1971, Ser. No. 203,870
Claims priority, application Switzerland, Dec. 7, 1970, 18,133/70
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 H **13 Claims**

Compounds of the class of 1-[2-[4-[3-(p-fluorobenzoyl)-alkyl] - 1 - piperazinyl]-ethyl] - 3 - alkyl-2-imidazolidinone which may be substituted in the 4-position of the imidazolidinone ring by an alkyl group having 1 to 4 carbon atoms and pharmaceutically acceptable acid addition salts thereof have an anti-emetic action and also a moderate central depressant action, e.g. they inhibit motility. They moreover exhibit no cataleptic inherent action. Such compounds can be prepared for instance by reaction of 1-[2-(1-piperazinyl)-ethyl]-3-methyl - 2 - imidazolidinone with 4 - chloro-4'-fluorobutyrophenone. The compounds are active ingredients of pharmaceutical compositions.

3,812,127
4-(QUINOLIN-4-YL)PIPERAZINE-1-CARBOXYLIC ACID ESTERS
Timothy H. Cronin, Niantic, and Hans-Jurgen E. Hess, Old Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.
No Drawing. Application Mar. 17, 1970, Ser. No. 20,381, now Patent No. 3,702,849, dated Nov. 14, 1972, which is a division of application Ser. No. 678,191, Oct. 26, 1967, now Patent No. 3,517,005, dated June 23, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 590,494, Oct. 31, 1966. Divided and this application June 2, 1972, Ser. No. 259,113
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BQ **3 Claims**

Substituted 6,7 - dialkoxyquinazolines, 4-(6,7-dialkoxyquinolin-4-yl)-piperazine-1-carboxylic acid, esters, and 1-amino-6,7-dialkoxyisoquinolines and their pharmaceutically-acceptable acid addition salts. Compounds manifest bronchodilator activity and anti-hypertensive response with minimal adverse effects upon administration to afflicted subjects.

3,812,128
N-ACYL SYDNONIMINE DERIVATIVES

Katsutada Masuda, Ashiya, and Yoshio Imashiro, Suita, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Application Sept. 14, 1970, Ser. No. 72,211, which is a continuation-in-part of abandoned application Ser. No. 651,137, July 5, 1967. Divided and this application Mar. 6, 1972, Ser. No. 232,253
Claims priority, application Japan, July 4, 1966, 41/43,449
The portion of the term of the patent subsequent to Apr. 4, 1984, has been disclaimed
Int. Cl. C07d *85/50*
U.S. Cl. 260—268 N **8 Claims**

Derivatives of the sydnonimines according to U.S. Pat. No. 3,312,690, wherein the imino group is replaced by N-formyl, N-acetyl, N-propionyl, N-monochloro acetyl, N-dichloro acetyl, N-trichloro acetyl, N-trifluoro acetyl, N-phenoxy acetyl, N-phenoxy propionyl, N-phenyl acetyl, N-phenyl propionyl, N-cinnamoyl, N-benzoyl, N-ethoxy carbonyl, N-benzyloxy carbonyl, N-methyl carbamoyl, N-ethyl carbamoyl, N-phenyl carbamoyl, N-nicotinoyl, N-isonicotinoyl, N-(N'-carbobenzyloxy alanyl), N-methyl sulfonyl, N-phenyl sulfonyl, N-p-chlorophenyl sulfonyl, N-nitroso, etc., and pharmaceutically acceptable salts thereof have superior utility as hypotensive drugs, coronary and peripheral vessel dilators or muscle relaxants. The 3-positioned

group may also be an

group, each aralkyl having 7 to 9 carbon atoms.

3,812,129
PIPERAZINYL SUBSTITUTED ALKOXY BENZOPHENONES

Albrecht Edenhofer, Riehen, Henri Ramuz, Birsfelden, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application May 21, 1970, Ser. No. 39,505, now Patent No. 3,706,755, dated Dec. 19, 1972, which is a continuation-in-part of abandoned application Ser. No. 567,354, July 25, 1966. Divided and this application Apr. 19, 1972, Ser. No. 245,610
Claims priority, application Switzerland, July 30, 1965, 10,769/65
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **8 Claims**

Novel benzophenone derivatives bearing a piperazinyl substituted lower alkoxy group are disclosed together with processes for preparing these compounds. These novel benzophenones are useful as psychosedative agents.

3,812,130
PROCESS FOR PREPARING NAPHTHALENE-1,8-DICARBOXYLIC ACID IMIDE

Josef Landler, Hofheim, Taunus, and Ernst Spietschka, Oberauroff, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 24, 1972, Ser. No. 274,331
Int. Cl. C07d *39/00*
U.S. Cl. 260—281 **1 Claim**

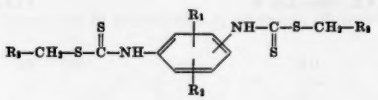
Process for preparing naphthalene-1,8-dicarboxylic acid-imide, wherein solid naphthalene-1,8-dicarboxylic acid-anhydride is reacted with gaseous ammonia at elevated temperatures. This process yields naphthalene-1,8-dicarboxylic acid imide in an almost quantitative yield and in a high purity, so that it may be directly used for the preparation of perylene-tetracarboxylic acid-diimide pigments.

3,812,131
PHENYLENE-BIS-DITHIOCARBAMIC ACID ESTERS

Manfred Schorr, Frankfurt am Main, Walter Durckheimer, Hattersheim am Main, Lothar Behrendt, Konigstein, Taunus, and Dieter Duwel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main-Hoechst, Germany

No Drawing. Original application Sept. 8, 1970, Ser. No. 70,485, now Patent No. 3,676,446, dated July 11, 1972. Divided and this application Apr. 17, 1972, Ser. No. 244,981
Claims priority, application Germany, Sept. 20, 1969, P 19 47 746.4
Int. Cl. C07d *33/60, 35/44*
U.S. Cl. 260—283 S **3 Claims**

Anthelmintically active phenylene-bis-dithiocarbamic acid esters of the formula



in which R_1 and R_2 are equal or different and represent hydrogen, halogen, alkyl or alkoxy having from 1 to 6 carbon atoms and R_3 is pyridyl, quinolyl or isoquinolyl which may be substituted by one or more alkyl radicals having from 1 to 6 carbon atoms. A process for their preparation.

3,812,132
REDUCTION OF THEBAINE

Edward Leon Grew and Alastair Agnew Robertson, Edinburgh, Scotland, assignors to Macfarlan Smith Limited, Edinburgh, Scotland

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,298
Claims priority, application Great Britain, Dec. 11, 1970, 58,926/70
Int. Cl. C07d *43/28*
U.S. Cl. 260—285 **12 Claims**

A process for the preparation of 8:14-dihydrothebaine from thebaine, in which the thebaine is reduced by heating it with at least one of the thermally decomposable compounds selected from an aryl or substituted aryl sulphonic acid hydrazide, an alkyl or substituted alkyl sulphonic acid hydrazide, an aralkyl or substituted aralkyl sulphonic acid hydrazide or disodium azodicarboxylate, provided that when disodium azodicarboxylate is used, a proton supplying substance is present. The 8:14-dihydrothebaine may be hydrolyzed to dihydrocodeinone.

3,812,133
N-PHENYLPROPYLENE SUBSTITUTED TETRAHYDRO-ISOQUINOLINES

John Mervyn Osbond, Hatfield, and Graham Alwyn Fothergill, Knebworth, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 22, 1971, Ser. No. 203,100
Int. Cl. C07d *35/28*
U.S. Cl. 260—289 R **9 Claims**

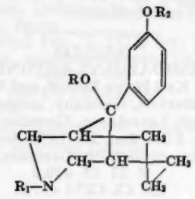
Novel tetrahydro-isoquinolines bearing in the 2-position a substituted phenylpropylene group and processes for the preparation thereof are disclosed. These novel derivatives are useful as analgesic and antitussive agents and to reduce intestinal motility.

3,812,134
4β-ALKOXY-4α-(3'-HYDROXYPHENYL)-3α,5α-PROPANOPIPERIDINE DERIVATIVES

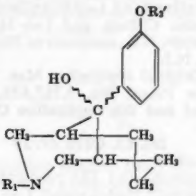
Issei Iwai, Eiji Ohki, Sadao Oida, Hiromu Takagi, and Yoshihiko Ohashi, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,810
Claims priority, application Japan, Nov. 18, 1971, 46/92,574
Int. Cl. C07d 39/00
U.S. Cl. 260—293.54 5 Claims

4β-alkoxy-4α-(3' - hydroxyphenyl) - 3α,5α - propanopiperidine derivatives having the formula



wherein R represents an alkyl group having 1–5 carbon atoms, R_1 represents an alkyl group having 1–5 carbon atoms or a phenylalkyl group having 1–5 carbon atoms in the alkyl moiety and R_2 represents hydrogen atom or an alkyl group having 1–5 carbon atoms. The piperidine derivatives are useful as analgesics and antitussives and prepared by reacting 4β (or α)-hydroxy-4α (or β)-(3'-hydroxyphenyl) - 3α,5α - propanopiperidine derivative having the formula



wherein R_1 is the same as above and R_2' represents R_2 or an alkoxyalkyl group having 1–5 carbon atoms in each alkyl moiety with an alkanol having the formula

R—OH

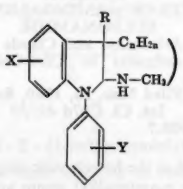
wherein R is the same as above in the presence of an acid.

3,812,135
PYRROLOINDOLE AND PYRIDOINDOLE DERIVATIVES

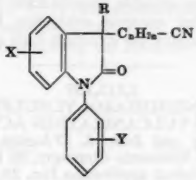
Tadashi Okamoto, Ashiya, Takeshi Akase, Nishinomiya, Takahiro Izumi and Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,035
Claims priority, application Japan, Mar. 6, 1971, 46/11,966
Int. Cl. C07d 27/36
U.S. Cl. 260—293.55 2 Claims

Novel indole derivatives of the formula.



wherein X and Y are each hydrogen, halogen, lower alkyl or lower alkoxy; R is hydrogen or lower alkyl; and *n* is 1 or 2, or salts thereof having high anti-inflammatory activity. The indole derivatives are prepared by reducing a 2-oxyindole derivative of the formula,



wherein X, Y, R and *n* are as defined above.

3,812,136
TRI-SUBSTITUTED IMIDAZOLES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 5, 1972, Ser. No. 250,505
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 5 Claims

This relates to a new class of imidazoles which are substituted at the 2-carbon by an aryl or heterocyclic moiety and which are substituted at the 4 and 5 carbons by cyano, carboxy, alkoxycarbonyl, carbamoyl or N-substituted carbamoyl. These products have utility as anti-hyperuricemic agents in the treatment of gout.

3,812,137
CATALYTIC PRODUCTION OF ANILINE AND OTHER AMINES FROM CARBOXYLIC ACIDS AND AMMONIA

Francis Clyde Rauch and Gregory Gerasimos Arzoumanidis, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 29, 1971, Ser. No. 202,786
Int. Cl. C07d 31/42
U.S. Cl. 260—296 R 25 Claims

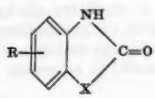
Aromatic and heterocyclic carboxylic acids are converted to amines by reaction with ammonia or a primary or secondary aromatic or aliphatic amine and a polyvalent metal compound using heat and pressure. Examples include conversion of benzoic acid to aniline, nicotinic acid to aminopyridine, etc. Preferred metal compounds include cupric oxide. Ammonia is the preferred amino reactant. The metal compound is reduced in the reaction but the reduced species is easily oxidized for use in subsequent reactions to provide an essentially catalytic process.

3,812,138
PROCESS FOR PREPARING BENZOXAZOLONES-(2) AND BENZOTHIAZOLONES-(2)

Hartm .t Heise, Neuenhain, Taunus, and Bernhard Mees, Konigstein, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 23, 1972, Ser. No. 265,604
Claims priority, application Germany, June 24, 1971, P 21 31 366.6
Int. Cl. C07d 85/38, 91/44
U.S. Cl. 260—304 2 Claims

A process for preparing benzoxazolones-(2) and benzothiazolones-(2) having the general formula



wherein R is a hydrogen or halogen atom, preferably a chlorine or bromine atom, an alkyl group having 1 to 3 carbon atoms, preferably a methyl group, an alkoxy group having 1 to 3 carbon atoms, preferably a methyl group and X is oxygen or sulfur.

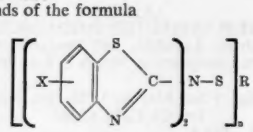
The benzoxazolones-(2) or the benzothiazolones-(2) thus obtained are valuable intermediates for pharmaceutical products, for example analgetics, hypnotics, antipyretics and especially for dyestuffs such as azo dyestuffs.

3,812,139
N,N-DI(2-BENZOTHIAZOLYL)SULFENAMIDES USEFUL AS VULCANIZATION ACTIVATORS

Kamel Boustany and John J. D'Amico, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Jan. 28, 1971, Ser. No. 110,658, now Patent No. 3,689,467. Divided and this application Apr. 3, 1972, Ser. No. 240,841
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 **6 Claims**

Compounds of the formula



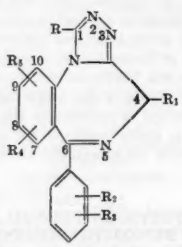
wherein X is hydrogen, alkyl, alkoxy, nitro, halo, or hydroxy and *n* is one or two; when *n* is one R is alkyl, cycloalkyl, aralkyl or aryl; when *n* is two R is alkylene which compounds are delayed action cure activators for rubber.

3,812,140
4H-1,2,4-TRIAZOLOBENZOPHENONE COMPOUNDS

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Feb. 9, 1971, Ser. No. 114,049, now Patent No. 3,709,898, dated Jan. 6, 1973. Divided and this application May 11, 1972, Ser. No. 252,504
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 R **3 Claims**

A multistep process for the production of triazolobenzodiazepines of the formula I:



I

wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; wherein R_1 is hydrogen or alkyl defined as above; and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, fluorine, chlorine, bromine, nitro, cyano, trifluoromethyl, alkoxy of 1 to 3 carbon atoms, inclusive, amino, alkanoylamino in which the alkanoyl group is of 1 to 3 carbon atoms, inclusive, alkylthio, in which the alkyl group is defined as above, alkylsulfinyl, in which the alkyl group is defined as above, and dialkylamino, in which the alkyl group is defined as above, and for some of intermediates is claimed. The final compounds and intermediates are tranquilizers and sedatives and are useful in mammals, including man and birds.

3,812,141
METHODS OF PREPARING 2-CYANO-1-SUBSTITUTED-5-NITROIMIDAZOLES

Jay Donald Albright, Nanuet, and Robert Gordon Shepherd, South Nyack, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application June 16, 1969, Ser. No. 833,683, now Patent No. 3,652,555. Divided and this application Sept. 23, 1971, Ser. No. 183,243
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **2 Claims**

Methods of preparing 2-cyano-1-substituted-5-nitroimidazoles which find utility as intermediates to produce antibacterial agents such as 2-(2-amino-1,3,4-thiadiazol-5-yl)-1-methyl-5-nitroimidazole.

3,812,142
IMIDAZOLYL KETONES

Werner Meiser, Karl Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,556
Claims priority, application Germany, Feb. 5, 1971, P 21 05 490.0
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **33 Claims**

Imidazole derivatives of alkyl, cycloalkyl or aryl ketones are antimycotic agents. The compounds, of which 1-imidazolyl-1-(4'-chlorophenoxy)-3,3-dimethylbutan - 2-one is a typical embodiment, can be obtained from the corresponding hydroxy or halo ketone through treatment with imidazole.

3,812,143
PROCESS FOR 2,3-DIHYDRO-5-PHENYL-5H-IMIDAZO[2,1-a]ISOINDOLES

Werner Metlesics, Clifton, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Mar. 7, 1968, Ser. No. 711,202, now Patent No. 3,717,658, dated Feb. 20, 1973. Divided and this application Oct. 5, 1972, Ser. No. 295,413
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **3 Claims**

Processes involving (a) The preparation of 3'-phenylspiro[imidazolidine-2,1'-phthalans] I or the tautomers 2-[2'-(α-hydroxyphenylmethyl)-phenyl]-2 - imidazolines II by the reduction of the corresponding 2-benzoyl-phenyl-2-(2-imidazolines) III; (b) The treatment of phthalans I or II with a strong base or acid to obtain 5-phenyl-2,3-dihydro-5H-imidazo[2,1-a]isoindoles VIII which upon oxidation yield the corresponding 5-phenyl-2,3-dihydro-5-hydroxy-5H-imidazo[2,1-a]isoindoles IV or the tautomers 2-benzoyl-phenyl-2-(2-imidazolines) III; (c) The preparation of imidazolines III and IV by the oxidation of 2-hydroxy-methylbenzhydrols to 2-benzoyl-benzaldehydes VI, treatment of VI with a diamine to form imidazolines VIII which are then oxidized to form imidazolines III and IV; and (d) The treatment of o-cyano-diphenylmethanes with a halogenating agent followed by reaction with a diamine to give imidazolines VIII. The phthalans I and II are also useful as antidepressants. The imidazolines III and IV are useful as psychostimulants.

3,812,144
DERIVATIVES OF p-AMINOALKYLBENZENE SULFONAMIDE

Henri Dietrich, Arlesheim, and Claude Lehmann, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,843
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 **10 Claims**

1-(p-aminoalkylphenylsulfonyl) - 2 - imino - imidazolidines, substituted at the heterocyclic ring and at the nitrogen atom of the p-aminoalkyl group are prepared; these

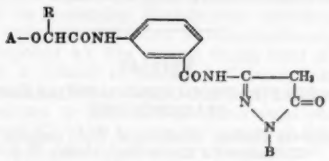
compounds and the pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; pharmaceutical compositions comprising said compounds and methods of producing hypoglycemic effects in mammals are provided; an illustrative embodiment is 1-{p-[2-(m-methoxybenzamido) - ethyl] - phenylsulphonyl}-2-imino-3-cyclohexyl-imidazolidine.

3,812,145
PROCESS FOR THE PREPARATION OF PYRAZOLONE DERIVATIVES

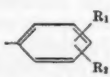
Hiroshi Sato, Daijiro Nishio, and Takeshi Takahashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,685
Claims priority, application Japan, Dec. 4, 1970, 45/106,715
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 A **17 Claims**

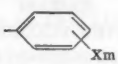
A process for the preparation of pyrazolone derivatives represented by the following formula



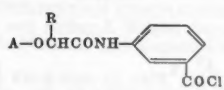
wherein R represents a member selected from the group consisting of a hydrogen atom or an alkyl group having 1–6 carbon atoms, A represents



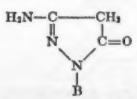
wherein R_1 is a member selected from the group consisting of a hydrogen atom or an alkyl group and R_2 is an alkyl group, and B represents



wherein X, which may be the same or different, represents at least one member selected from the group consisting of a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxyl group, a cyano group, or a halogen atom and *m* is 1–5, which comprises condensing, in acetonitrile, a compound represented by the general formula



wherein A and R have the same meanings as defined above, with a compound represented by the general formula



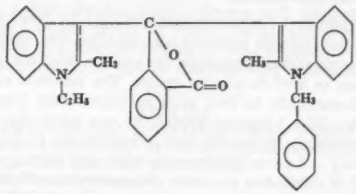
wherein B has the same meaning as defined above.

3,812,146
PHTHALIDE

Sheldon Farber, Appleton, Wis., and Arthur J. Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed May 12, 1972, Ser. No. 252,785
Int. Cl. C07d *5/06, 27/56*
U.S. Cl. 260—326.14 R **1 Claim**

The phthalide, 3 - (1 - ethyl-2-methylindol-3-yl)-3-(1-benzyl-2-methylindol-3-yl) phthalide, is disclosed. This phthalide is represented by the structure:



This compound is used in pressure-sensitive record material and in mark-forming manifold systems.

3,812,147
ACYLXYLIDIDE LOCAL ANAESTHETICS

Herbert J. F. Adams, Westboro, and George H. Kronberg and Bertil H. Takman, Worcester, Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,777, Dec. 22, 1970. This application July 19, 1971, Ser. No. 164,022
Int. Cl. C07c *103/18;* **C07d** *27/04*
U.S. Cl. 260—326.3 **10 Claims**

The 2-alkyl-2-alkylamino - 2′,6′ - acetoxylidide compounds are useful as long lasting local anaesthetics.

3,812,148
PREPARATION OF 2-PYRROLIDONE

Elmer J. Hollstein, Wilmington, Del., and Walter A. Butte, Jr., West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed July 21, 1972, Ser. No. 274,039
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FN **7 Claims**

A process for preparing 2-pyrrolidone which comprises reacting succinic acid or its precursor, hydrogen, and ammonia in an aqueous system at a mole ratio of ammonia to acid of 1.3:1 to 1.7:1, at a temperature of from about 250° C. to about 275° C., at a pressure of from about 1500 to 2000 p.s.i.g., for a time of about 1 to 4 hours, and in the presence of a catalyst of ruthenium.

3,812,149
PREPARATION OF 2-PYRROLIDINONE

Elmer J. Hollstein, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed July 21, 1972, Ser. No. 274,120
Int. Cl. C07d *27/08*
U.S. Cl. 260—326.5 FN **7 Claims**

A process for preparing 2-pyrrolidinone which comprises reacting succinic acid or its precursor, hydrogen, and ammonia in an aqueous system at a mole ratio of ammonia to acid of about 1.1:1 to about 1.7:1, at a temperature of from about 250° C. to about 275° C., at a pressure of from about 1500 to 2000 p.s.i.g., for a time of about 3 to about 6 hours, and in the presence of a rhodium catalyst.

3,812,150

3,3-DISUBSTITUTED-BENZODIOXEPINS

Burton K. Wasson, Valois, Quebec, and Haydn W. R. Williams, Dollard des Ormeaux, Quebec, Canada, assignors to Charles E. Frosst & Co., Montreal, Quebec, Canada

No Drawing. Original application June 9, 1969, Ser. No. 832,897, now Patent No. 3,700,691. Divided and this application May 1, 1972, Ser. No. 249,422

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 **5 Claims**

3-hydroxy-3-(substituted-aminoalkyl)-3,4-dihydro-2H-1,5-benzodioxepin products are described that exhibits β-adrenergic stimulating properties and are therefore suitable for use as bronchodilating agents. The products are prepared essentially by four principal routes from 3-oxo-3,4-dihydro-2H-1,5-benzodioxepins. By one route the 3-oxo-benzodioxepin is treated with a nitroalkane to give a 3-hydroxy - 3-nitroalkyl-benzodioxepin the nitro group of which is reduced to an amine and the resulting compound reacted with an aldehyde or ketone under hydrogenating conditions to introduce the desired substituent into the amino function. By a second route the 3-oxobenzodioxepin is reacted with an alkali metal nitrile to form the cyanhydrin which upon reduction forms the 3 - hydroxy-3-aminoalkyl-benzodioxepin that can be treated with a ketone or aldehyde to give the desired products or can be reacted with sodium nitrite or other agents to form a 3-spiro-benzodioxepin-2'-oxirane which upon reaction with an amine provides the desired product. The 3-spiro-benzodioxepin-2'-oxirane also can be obtained by treatment of the 3-oxo-benzodioxepin with a sulfurylide. A fourth method involves forming a benzodioxepin-3-spiro-5'-oxazolidin-2'-one which upon treatment with dilute alkali gives the desired 3-hydroxy-3-(substituted aminoalkyl)-3,4-dihydro-2H-1,5-benzodioxepin. The intermediate oxazolidinone compounds can be treated if desired with various agents to attach substituents on the benzenoid moiety of the starting substance. These oxazolidinone exhibit β-stimulating and skeletal muscle relaxant properties.

3,812,151

β-(2,4,6-TRIIODO-3-ACETAMIDINOPHENYL)-PROPIONIC ACIDS

Heinrich Pfeiffer, Karl Heinz Kolb, Alois Harwart, and Paul E. Schulze, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

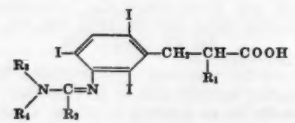
No Drawing. Filed Nov. 6, 1970, Ser. No. 87,612

Claims priority, application Germany, Nov. 8, 1969, P 19 56 844.6

Int. Cl. C07d *27/04*; C07c *101/44*

U.S. Cl. 260—326.47 **17 Claims**

Amidines of the formula



wherein R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, and R_3 and R_4, which can be alike or different, each is a hydrogen atom or lower alkyl, or collectively with the nitrogen atom to which they are attached, a heterocyclic ring containing 0–1 additional hetero atoms selected from oxygen and nitrogen, including the physiologically acceptable salts thereof, are useful as radiopaque agent.

3,812,152

NOVEL DIBENZOFURAN AND DIBENZOTHIOPHENE DERIVATIVE

Kurt Hofer, Muenchenstein, Basel-Land, and Anton Voykowitsch, Binningen, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,397

Claims priority, application Switzerland, Mar. 13, 1970, 3,754/70

Int. Cl. C07d *63/24, 5/44*

U.S. Cl. 260—329.3 **14 Claims**

This invention is directed to new heterocyclic compounds for stabilizing organic materials. The basic structural unit of these compounds is dibenzofuran or dibenzothiophene, to which at least one alkyl-substituted phenol group is bound through a methylene bridge.

3,812,153

PROCESS FOR PRODUCING MONOALKANOYL-FLUORESCEINS

Harvey Gurien, Maplewood, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 5, 1972, Ser. No. 312,386

Int. Cl. C07d *7/42*

U.S. Cl. 260—335 **5 Claims**

Higher monoalkanoylfluoresceins are prepared by a process wherein a higher alkanoyl halide and fluorescein are reacted in a suitable aprotic solvent and the product, higher monoalkanoylfluorescein, substantially free of undesirable contaminants and co-products is isolated. The higher alkanoylfluoresceins are useful in fluorometric methods for determining lipolytic hemolysis.

3,812,154

DIOXATRICYCLODECANES

Peter Willibrord Thies, Hannover, Germany, assignor to Kali-Chemie Aktiengesellschaft, Hannover, Germany

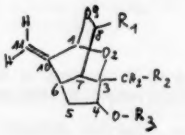
Filed Dec. 7, 1970, Ser. No. 97,420

Claims priority, application Germany, Dec. 8, 1969, P 19 61 433.6; June 6, 1970, P 20 27 890.4

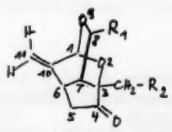
Int. Cl. C07d *15/04*

U.S. Cl. 260—340.3 **3 Claims**

A 2,9-dioxatricyclo-(4,3,1,0^{3,7})-decane of the formulae Ia and Ib



Ia



Ib

in which R_1 is alkoxy or aralkoxy, R_2 is hydrogen, halogen or —SCN, R_3 is hydrogen or acyl, and the 10,11-double bond may also be hydrogenated.

The compounds are hypotensive and centrally depressant and analgetic agents and are useful for treating arteriosclerotic diseases and as psychopharmaceuticals.

3,812,155
PRODUCTION OF DIDEOXYZEARALANE
Herbert L. Wehrmeister and Donald E. Robertson, Terre Haute, Ind., assignors to Commercial Solvents Corporation
No Drawing. Continuation of abandoned application Ser. No. 729,409, May 15, 1968. This application Oct. 7, 1970, Ser. No. 78,925
Int. Cl. C07d 9/00
U.S. Cl. 260—343.2 F **8 Claims**

The new compounds 3-(9-decenylidene)phthalide; 3-(9 - decenyl)phthalide; 3-(9-hydroxydecyl)phthalide; 2-(1,10-dihydroxyundecyl)benzoic acid; and 2-(10-hydroxyundecyl)benzoic acid; and a racemic mixture of dideoxyzearalane are provided; animal feeds containing growth promoting amounts of the racemic mixture of dideoxyzearalane are provided; and processes for producing the new compounds, the racemic mixture of dideoxyzearalane, and dideoxyzearalane are provided.

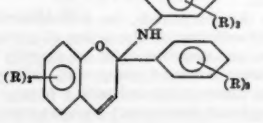
A racemic mixture of (±)-dideoxyzearalane can be prepared by condensing 10-undecenoic anhydride with phthalic anhydride to produce 3-(9-decenylidene)phthalide (Compound A). The internal double bond of Compound A is reduced to produce 3-(9-decenyl)phthalide (Compound B). The terminal double bond of Compound B is hydrated to produce 3-(9-hydroxydecyl)phthalide (Compound C) which is saponified to produce the salt of Compound D [2-(1,10-dihydroxyundecyl)benzoic acid]. The salt of Compound D is subjected to hydrogenolysis to produce 2-(10-hydroxyundecyl)benzoic acid (Compound E) which is subjected to lactonization to provide (±)-dideoxyzearalane. The specific (+)-dideoxyzearalane or (−)-dideoxyzearalane compounds can be produced by resolving racemic mixtures.

3,812,156
PROCESS FOR PREPARING LOWER ALKYL FLAVONE-7-OXYACETATES
Giuseppe Bonola, San Donato Milanese, and Enrico Sianesi, Milan, Italy, assignors to Recordati SA Chemical and Pharmaceutical Company, Lugano, Switzerland
No Drawing. Filed Oct. 21, 1971, Ser. No. 191,479
Claims priority, application Italy, Feb. 19, 1971, 20,755/71
Int. Cl. C07d 7/34
U.S. Cl. 260—345.2 **6 Claims**

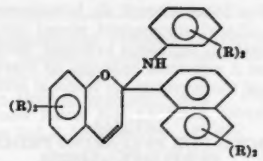
Lower alkyl esters of flavone-7-oxyacetic acid are made by reacting chloroacetonitrile with resacetophenone to give 2'-hydroxy-4'-cyanomethoxy acetophenone, reacting the latter compound with benzoyl chloride to give 1-(2-hydroxy-4-cyanomethoxy phenyl)-3-phenyl propane-1,3-dione and then reacting the latter compound with an anhydrous lower alkanol in the presence of a mineral acid.

3,812,157
BENZOPYRAN COMPOUNDS
Chao-Han Lin and Arthur J. Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Mar. 31, 1972, Ser. No. 240,112
Int. Cl. C07d 7/26
U.S. Cl. 260—345.2 **7 Claims**

Colorless, but colorable benzopyran compounds are disclosed, which are represented by the formula:



or



wherein each R is hydrogen, an alkyl radical having 1 to 5 carbon atoms, an alkoxy radical having 1 to 5 carbon atoms, a dialkylamino radical wherein each alkyl radical has 1 to 5 carbon atoms, an amino radical, a nitro radical or a halogen. These compounds are used in pressure-sensitive record material and in mark-forming manifold systems.

3,812,158
PREPARATION OF DIHYDROFURAN FROM 3,4-EPOXY-1-BUTENE, 3,4 - DIHYDROXY-1-BUTENE, OR 1,4-DIHYDROXY-2-BUTENE
Alfio J. Besozzi, Stone D. Cooley, and Fred E. Potts III, Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,278
Int. Cl. C07d 5/08
U.S. Cl. 260—346.1 R **15 Claims**

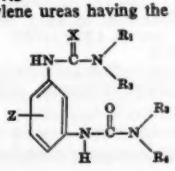
2,5-dihydrofuran is prepared by contacting 3,4-epoxy-1-butene, 3,4-dihydroxy-1-butene or 1,4-dihydroxy-2-butene with soluble mercury salt such as $HgSO_4$ in a hydroxylic solvent (e.g. water or butanol) which is neutral or acidic at a moderate temperature, e.g., 20 to 110° C. Yields as high as 33 mole percent based on the starting material charged have been achieved.

3,812,159
POLYBASIC AROMATIC CARBOXYLIC ACIDS, ESTERS AND ANHYDRIDES
Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 799,106, Feb. 13, 1969. This application June 11, 1971, Ser. No. 152,439
Int. Cl. C07c 63/02, 63/48
U.S. Cl. 260—346.3 **9 Claims**

This invention relates to novel aromatic polycarboxylic acids, the anhydrides and isomers thereof and more particularly to the use of said acids and anhydrides for the preparation of thermally stable high-molecular weight polymers including, for example, the polyamides, polybenzimidazoles, polyimidazopyrrolones, polyimides, polyesters and the like. These acids and/or anhydrides are obtained by reacting stoichiometric amounts of an alkali metal C_1–C_8 mono- or poly-alkyl substituted phenoxide with bis(chlorophenyl) sulfone to obtain bis(alkyl-substituted phenoxyphenyl) sulfone intermediates which are oxidized to the corresponding bis(carboxyphenoxyphenyl) sulfones.

3,812,160
BIS-META-PHENYLENE UREAS
Eugene G. Tench, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application Oct. 12, 1970, Ser. No. 80,120, now Patent No. 3,707,556. Divided and this application Oct. 2, 1972, Ser. No. 294,111
Int. Cl. C07d 5/16
U.S. Cl. 260—347.3 **3 Claims**

Bis-meta-phenylene ureas having the formula:



in which X represents oxygen or sulfur, R_1 represents lower alkyl or lower alkenyl, R_2 is hydrogen, R_3 represents alkyl, alkenyl, chloroacetyl, phenyl and chloro substituted phenyl, R_4 represents hydrogen, lower alkyl and furfuryl, and Z represents hydrogen or lower alkyl. The compounds of this invention are useful as herbicides.

3,812,161
PROCESS FOR PREPARING PRIMARY FURFURYL AMINES

Albert Bouniot, Melle, France, assignor to Melle-Bezons, Melle, Deux-Sevres, France

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,756, now Patent No. 3,565,954. Divided and this application Sept. 10, 1970, Ser. No. 71,210
Claims priority, application France, Mar. 8, 1967, 97,742
Int. Cl. C07d *5/16*
U.S. Cl. 260—347.7 **29 Claims**

The process for preparation of primary amines by reaction of a carbonyl compound with an auxiliary amine in the liquid phase to produce an imine which is then catalytically hydrogenated in the presence of ammonia to produce the primary amine in which the auxiliary amine may be regenerated as a by-product of the reaction for recycling to produce the imine and in which the operations can be carried out batchwise or in a continuous operation.

3,812,162
AZIDES

Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, Calif., and Wayne M. Moreau, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Sept. 29, 1970, Ser. No. 76,398, now Patent No. 3,695,886. Divided and this application May 15, 1972, Ser. No. 253,651
Int. Cl. C07c *117/00*
U.S. Cl. 260—349 **4 Claims**

Light sensitive photoresist compositions particularly useful for projection exposure applications include a photocrosslinkable polymer and novel sensitizers which are bis-p-azido cinnamylidene derivatives of cyclic and linear ketones.

3,812,163
METHOD FOR THE PREVENTION OF THE FORMATION OF SOLID RESIDUES ON THERMAL TREATMENT OF FUFURAL OR FURFURAL-EXTRACT MIXTURES

Ulrich Lohmüller, Salzbergen, Germany, assignor to Wintershall Aktiengesellschaft, Kassel, Germany

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,036
Int. Cl. C07d *5/22*
U.S. Cl. 260—347.9 **2 Claims**

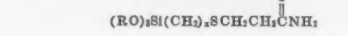
The formation of solid residues during thermal treatment of furfural or furfural-extract mixtures is prevented by passing the furfural or furfural-extract mixtures at a temperature of 120 to 220° C. through a layer of porous coarse-grained gas coke, the grains having a diameter of 3 to 10 cm, using a charge of 0.1 to 10 volumes of furfural or furfural-extract mixture per volume of porous gas coke layer.

3,812,164
SILICONE ELASTOMERS WITH PAINTABLE SURFACE

Jay R. Schulz, Bangor Township, Bay County, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 16, 1973, Ser. No. 333,425
Int. Cl. C08g *51/04*
U.S. Cl. 260—375 B **14 Claims**

Mixing a hydroxyl endblocked polydimethylsiloxane, a filler, an alkoxy silicon compound, such as, n-propylorthosilicate,



$$(RO)_3Si(CH_2)_3SCH_2CH_2\overset{O}{\overset{\|}{C}}NH_2$$

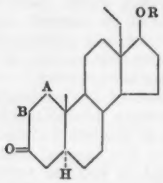
and a metal carboxylate provides a room temperature vulcanizable silicone elastomer composition which cures to provide an elastomer whose surface can be painted with either a latex base paint or an oil base paint.

3,812,165
18-METHYL-5α-H-ANDROSTANE DERIVATIVES AND PROCESS OF MAKING THE SAME

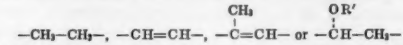
Hans-Detlef Berndt, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,158
Claims priority, application Germany, Feb. 24, 1968, P 16 68 687.6
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **17 Claims**

An androstane derivative having the formula:



wherein A–B is a group selected from the following:



$$-CH_2-CH_2-,\ -CH=CH-,\ -\overset{CH_3}{\overset{|}{C}}=CH-\text{ or }-\overset{OR'}{\overset{|}{C}}H-CH_2-$$

and R and R′ are the same or different and are hydrogen or an acyl residue. The compounds have a strong anabolic action and show a good dissociation of the anabolic main action from the undesired androgenous side effect.

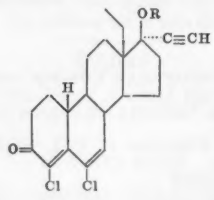
The compounds are made by reducing the 4,5-position of a Δ^4,1-2-saturated corresponding steroid and, if desired, dehydrogenating the 1,2-position or introducing a methyl group into the 1-position.

3,812,166
DICHLORO-SUBSTITUTED ESTRADIENE

Rudolf Wiechert and Hermann Steinbeck, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,480
Claims priority, application Germany, Sept. 13, 1968, P 17 93 422.4
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **14 Claims**

A racemic or optically active, 4,6-dichloro-4,6-estradiene of the formula



(I)

wherein R is hydrogen, alkyl, tetrahydropyranyl or an acid residue.

To form the compounds, the 4-unsubstituted 6-chloroestradiene is subjected to the action of an agent furnishing positive and negative chlorine, thereby forming the 6,6,7-trichloro-substituted compound, followed by treatment of the latter compound with a base.

The compounds have a very high progesterone activity.

3,812,167

GERMANIUM DERIVATIVE

Ung Soo Pahk, % U.S. Pahk Heart Foundation, 1028 Connecticut Ave. NW., Washington, D.C. 20036

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,877

Claims priority, application Canada, Aug. 27, 1971, 121,624

Int. Cl. C07f 7/00

U.S. Cl. 260—429 R **3 Claims**

There is disclosed the carboxyethyl germanium sesquioxide which is useful in the treatment of hypertension.

3,812,168

2-(N'-METHOXY-N'-METHYL-UREIDO)-BENZAMIDE

Karl Hoegerle, Basel, Switzerland, Jean-Claude Muller, St. Louis, France, and Christian Vogel and Jurg Rumpf, Binningen, near Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

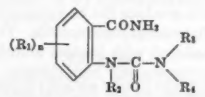
No Drawing. Original application Mar. 24, 1969, Ser. No. 809,978, now Patent No. 3,646,136. Divided and this application Nov. 19, 1971, Ser. No. 200,599

Claims priority, application Switzerland, Mar. 29, 1968, 4,710/68

Int. Cl. C07c 119/00

U.S. Cl. 260—453 R **1 Claim**

2-Ureido-benzamides of the formula



(I)

wherein:

R_1 represents halogen, lower alkyl or lower alkoxy of at most 5 carbon atoms,

R_2 represents hydrogen or lower alkyl of at most 5 carbon atoms,

R_3 represents hydrogen, lower alkyl or lower alkoxy of at most 5 carbon atoms,

R_4 represents an alkyl, alkenyl or alkynyl radical with at most 8 carbon atoms, lower halogen-alkyl, alkyoxy-alkyl or alkylmercaptoalkyl of at most 5 carbon atoms or cycloalkyl having 3 to 10 carbon atoms as ring members, and

n represents a whole number from 0 to 3,

are disclosed as herbicidally active compounds of enhanced toxicity to undesireable plant growth and improved selectivity. A method for controlling undesirable plant growth with such compounds and compositions containing them as active ingredients are also disclosed.

3,812,169

PREPARATION OF AROMATIC ISOCYANATES IN A TUBULAR REACTOR

Philip D. Hammond, North Haven, Conn., and John A. Scott, Joliet, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 24, 1972, Ser. No. 300,143

Int. Cl. C07c 119/04

U.S. Cl. 260—453 PC **8 Claims**

Aromatic isocyanates are produced directly from aromatic nitro compounds in a continuous process in which carbon monoxide and aromatic nitro compounds are reacted in a tubular reactor in the presence of a solvent and catalyst at an elevated temperature and pressure.

3,812,170

N-(3,3-DIPHENYL-3-CYANOPROPYL)-UREAS

Hermann Bretschneider, Wilhelm Klotzer, and Rudolf Franzmair, Innsbruck, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Aug. 1, 1969, Ser. No. 846,916, now Patent No. 3,665,012. Divided and this application Oct. 8, 1971, Ser. No. 187,834

Int. Cl. C07c 121/78

U.S. Cl. 260—465 D **2 Claims**

Novel 2-iminopyrrolidines substituted in the 1-position are prepared from 2-amino-Δ'-pyrrolines. The novel pyrrolidines are useful as anti-diabetic and hypoglycemic agents since they effect a lowering of the blood sugar content in warm blooded animals.

3,812,171

PRODUCTION OF NITRILES BY AMMOXIDATION

William C. Neikam, West Chester, and Robert L. James, Springfield, Pa., assignors to Sun Research and Development Co., Marcus Hook, Pa.

No Drawing. Filed June 29, 1972, Ser. No. 267,303

Int. Cl. C07c 121/02

U.S. Cl. 260—465 C **8 Claims**

In the process of carrying out ammoxidation reactions using V_2O_5 as catalyst, the improvement which comprises employing said V_2O_5 in the form of a molten eutectic mixture with K_2O.

3,812,172

15-METHYL AND 15-ETHYL DIHYDRO-PGE$_1$

Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 34,518, May 4, 1970, now Patent No. 3,728,382. This application May 24, 1972, Ser. No. 256,337

Int. Cl. C07c 61/32

U.S. Cl. 260—468 D **5 Claims**

Prostaglandin 13,14 - dihydro - PG$_1$-type and PG$_3$-type compounds with a methyl or an ethyl substituent at C–15. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,812,173

ORTHO-PHENYLENEDIAMINE DERIVATIVES

Raymond Giraudon, Lesigny, France, assignor to Rhone-Poulenc S.A., Paris, France

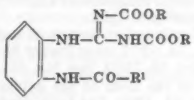
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,203

Claims priority, application France, Apr. 9, 1970, 7012837; Oct. 9, 1970, 7036616

Int. Cl. C07c 129/12

U.S. Cl. 260—471 C **10 Claims**

Compounds of the formula:



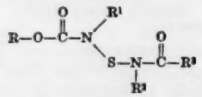
wherein the symbols R represent identical alkyl radicals of 1 through 4 carbon atoms, and the symbol R^1 represents hydrogen, alkyl of 1 through 6 carbon atoms, or alkoxy of 1 through 4 carbon atoms, possess fungicidal and anthelmintic properties.

3,812,174
SUBSTITUTED ARYL CARBAMATES

Melancthon S. Brown and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 14, 1970, Ser. No. 54,854
Int. Cl. C07c *161/00*
U.S. Cl. 260—479 C **10 Claims**

Carbamates of the formula



wherein R is aryl or aralkyl of 6 to 14 carbon atoms optionally substituted with halogen atoms, nitro groups, alkoxy groups, alkylthio groups or dialkylamino groups; R^1 is hydrogen or alkyl of 1 to 4 carbon atoms; R^2 is alkyl of 1 to 10 carbon atoms or cycloalkyl of 3 to 10 carbon atoms either being optionally substituted with halogen atoms; R^3 is hydrogen alkyl of 1 to 10 carbon atoms or cycloalkyl of 3 to 10 carbon atoms, the alkyl or cycloalkyl being optionally substituted with halogen atoms with the proviso that R^2 and R^3 may be joined to form a linear alkylene radical of 3 to 5 carbon atoms which is bound to the carbonyl and nitrogen to form a ring. The carbamates find use as insecticides.

3,812,175
MULTIPLE STAGE CARBONYLATION PROCESS

John Happel, Hastings-on-Hudson, N.Y., and Sumio Umemura, Ube-shi, Japan, assignors to National Lead Company, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,612
Int. Cl. C07c *51/14, 69/54*
U.S. Cl. 260—486 AC **6 Claims**

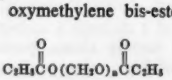
A carbonylation process for production of methyl methacrylate using a two reaction system in which each of the individual reaction systems supplies a reagent necessary for the other reaction system, more particularly, there is employed a first reaction system which produces nickel carbonyl from a nickel salt and carbon monoxide in the presence of a methanol and methacrylic acid solvent system, the latter being consumed by esterification with methanol, and being replaced by by-product methacrylic acid produced in a second reaction system which produces methyl methacrylate and methacrylic acid from methyl acetylene, carbon monoxide and the nickel carbonyl from the first reaction system in the presence of a methanol and water solvent system, the methacrylic acid being passed to the first reaction system, and the nickel carbonyl consumed in the reaction to make methyl methacrylate being replaced by nickel carbonyl made in the first reaction system, all the above system being carried out under critical conditions of pressure, temperature, concentrations, feed and flow rates and recycle control.

3,812,176
METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 221,415, Jan. 24, 1972, now Patent No. 3,720,706. This application Oct. 30, 1972, Ser. No. 302,373
The portion of the term of the patent subsequent to Mar. 13, 1990, has been disclaimed
Int. Cl. C07c *67/00*
U.S. Cl. 260—494 **11 Claims**

Methylene and oxymethylene bis-esters, e.g.,



wherein n is 1 to 5, are produced by the reaction of a carboxylic acid, ethylene, carbon monoxide and formaldehyde in the presence of a rhodium catalyst and an iodide or bromide promoter. In a preferred modification of the process, methylene and oxymethylene bis-alkanoates are produced directly from ethylene, carbon monoxide, water and formaldehyde in the presence of the rhodium catalyst and the iodide or bromide promoter.

3,812,177
2-(2-PHENYL-1,1,2,2-TETRAFLUOROETHYL)-BENZYLAMINES

Edward L. Engelhardt, Gwynedd Valley, and Marcia E. Christy, Perkasie, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 799,945, Feb. 2, 1969, which is a continuation-in-part of application Ser. No. 712,616, Mar. 13, 1968, both now abandoned. This application Dec. 28, 1970, Ser. No. 102,130
Int. Cl. C07c *87/28*
U.S. Cl. 260—501.21 **7 Claims**

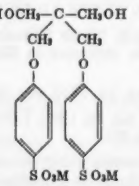
New fluoro derivatives of aralkylamine compounds, particularly 2-(2-phenyl-1,1,2,2-tetrafluoroethyl)benzylamine as well as the N-alkyl and the N,N-dialkyl derivatives thereof are prepared by reaction of 2-bromobenzonitrile with benzylmagnesium chloride to produce 2'-bromo-2-phenylacetophenone; oxidation of said acetophenone with selenous acid to produce 2-bromobenzil; conversion of the benzil compound by treatment with sulfur tetrafluoride to the corresponding 2-bromo-$\alpha,\alpha,\alpha',\alpha_3$-tetrafluorobenzyl; followed by reaction of the 2-bromobibenzyl compound with a metal cyanide to produce the corresponding 2-(2-phenyl-1,1,2,2 - tetrafluoroethyl)benzonitrile. This nitrile compound is then reduced with lithium aluminum hydride to produce the corresponding benzylamine, which is then converted, if desired, to the N-alkyl and/or N,N-dialkyl 2-(2-phenyl-1,1,2,2-tetrafluoroethyl)benzylamine. Alternatively, the nitrile or the precursor bromobibenzyl can be converted by Grignard reactions to the corresponding α-alkyl or α,α-dialkylbenzylamine which can then be converted if desired to the corresponding N-alkyl and/or N,N-dialkyl substituted benzylamine compound. The phenyltetrafluoroethylbenzylamine as well as its N-alkyl and N,N-dialkyl derivatives are active as antiarrhythmic agents.

3,812,178
POLYESTERS WITH IMPROVED DYEABILITY

Gene Clyde Weedon, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Nov. 16, 1971, Ser. No. 199,353, now Patent No. 3,753,949, dated Aug. 21, 1973. Divided and this application Apr. 30, 1973, Ser. No. 355,830
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 R **1 Claim**

Compounds useful for the production of cationic dyeable linear polyesters, having the formula:



wherein M is selected from the group consisting of alkali metals and ammonium.

3,812,179

15-METHYL AND ETHYL PGE_2

Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 34,518, May 4, 1970, now Patent No. 3,728,382. This application May 23, 1972, Ser. No. 256,174

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D 3 Claims

Prostaglandin E_2-type compounds with a methyl or an ethyl substituent at C–15. There are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,812,180

1-METHYL-SULFINYLBENZYLIDENE - 1,3,4,5-TETRAHYDRO - 5 - OXO-BENZ-(c,d)-INDENE-3-CARBOXYLIC ACID AND ESTERS

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 21, 1972, Ser. No. 273,897

Int. Cl. C07c *145/00*

U.S. Cl. 260—515 A 2 Claims

New substituted benzylidene benzindenyl acids and derivatives thereof which have anti-inflammatory, antipyretic and analgesic activity. Also included herein are methods of preparing said benzylidene benzindenyl acids, pharmaceutical compositions having said benzylidene benzindenyl acids as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,812,181

O-(α-HYDROXYCINNAMOYL)BENZOIC ACID AND RELATED COMPOUNDS

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,790

Int. Cl. C07c *65/02, 65/14, 65/20*

U.S. Cl. 260—520 3 Claims

A novel class of reagents react with primary amine-containing compounds, preferably polypeptides and amino acids, to form highly fluorescent products. This reaction serves as a basis for a rapid and highly sensitive assay method for primary amine-containing compounds.

3,812,182

S-BIS-(2-LOWER ALKYL AMINO HYDROXY-METHYLETHOXY)-METHANES

Leonard M. Weinstock, Belle Mead, Roger J. Tull, Metuchen, and Dennis M. Mulvey, Whitehouse Station, N.J., assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Application Aug. 16, 1971, Ser. No. 172,232, which is a division of application Ser. No. 818,474, Apr. 21, 1969, now Patent No. 3,657,237. Divided and this application June 18, 1973, Ser. No. 370,994

Int. Cl. C07d *87/46*

U.S. Cl. 260—584 R 2 Claims

Preparation of S-3-X-4-(3-substituted amino-2-hydroxypropoxy) - 1,2,5 - thiadiazole beta adrenergic blocking agents using as starting material an optically active alkamine in the sinister configuration, or a derivative of said alkamine, which is reacted with an 3-X-4-chloro-1,2,5-thiadiazole. Novel 3-morpholino - 4 - chloro-1,2,5-thiadiazoles and novel alkamines and their preparation also are described.

3,812,183

PREPARATION OF MONOHALOACETYL HALIDES

Virgil W. Gash and Donald E. Bissing, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 185,402, Sept. 30, 1971. This application July 31, 1972, Ser. No. 276,280

The portion of the term of the patent subsequent to Feb. 26, 1991, has been disclaimed

Int. Cl. C07c *53/02, 51/58*

U.S. Cl. 260—544 Y 1 Claim

A process for the preparation of monohaloacyl halides by halogenating ketenes in the presence of an alkoxyalkyl ester.

3,812,184

2-NITRO-5-(HALOPHENOXY)BENZOYL CHLORIDES

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 194,481, Nov. 1, 1971, which is a division of application Ser. No. 819,412, Apr. 25, 1969, now Patent No. 3,652,645. This application Feb. 22, 1973, Ser. No. 334,526

Int. Cl. C07c *79/46*

U.S. Cl. 260—544 M 5 Claims

2-nitro-5-(halophenoxy)benzoic acids and esters, salts, amides, and acyl halides thereof comprise a class of compounds that are highly effective pre- and post-emergence herbicides.

3,812,185

BENZENESULFONYL UREAS

Helmut Weber, Frankfurt am Main, Walter Aumüller and Karl Muth, Kelkheim, Taunus, and Rudi Weyer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

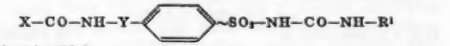
No Drawing. Continuation-in-part of applications Ser. No. 641,146, May 25, 1967, and Ser. No. 749,609, Aug. 2, 1968, both now abandoned. This application May 25, 1970, Ser. No. 41,161

Claims priority, application Germany, May 28, 1966, F 49,329; Apr. 18, 1967, F 52,152

Int. Cl. C07c *127/00*

U.S. Cl. 260—553 DA 10 Claims

Benzenesulfonyl-ureas having hypoglycemic activities corresponding to the formula



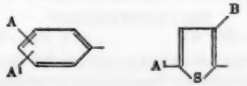
wherein R^1 is

(a) norcaran-7-yl, bicyclo-[3,1,0]-hexyl, bicyclo-[5,1,0]-octyl, or bicyclo-[6,1,0]-nonyl;

(b) 4,7-endomethylene - perhydroindan-5-yl; 4,7-endomethylene-6-chloro-perhydroindan-5-yl; 4,7-endomethylene-perhydroindan - 2 - yl; 2,6-endomethylenecycloheptyl; 2,5-endocyclobutylene-1,2-cyclohexyl; exo-tricyclo-$(3,2,1,0^{2,4})$-octanyl;

(c) spiro-(2-cyclopropane) - cyclopentyl; spiro-(2-cyclobutane)-cyclopentyl; spiro-(2-cyclopentane)-cyclopentyl; spiro-(2-cyclohexane)-cyclopentyl; or spiro-(5,5)-undecyl-3;

X is



in which

A stands for hydrogen, halogen, trifluoromethyl, phenoxy, lower alkyl or lower alkoxy both having 1–4 carbon atoms,

A^1 stands for hydrogen, halogen or lower alkyl of 1–4 carbon atoms and

B stands for hydrogen or lower alkoxy of 1–4 carbon atoms

Y is a hydrocarbon chain of 1–3 carbon atoms

or a physiologically tolerable salt thereof.

3,812,186

WATER-SOLUBLE, NONIONIC IODOMETHANE-SULFONAMIDE DERIVATIVES OPAQUE TO X-RAYS

Hans Suter, Dorflingen, and Hans Zutter and Hans Rudolf Muller, Schaffhausen, Switzerland, assignors to Eprova Aktiengesellschaft, Schaffhausen, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 224,297, Feb. 7, 1972. This application July 21, 1972, Ser. No. 274,079

Claims priority, application Switzerland, Mar. 23, 1971, 4,317/71; Nov. 17, 1971, 16,746/71, 16,747/71

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 A **6 Claims**

Compounds of the formula

wherein R is hydrogen or methyl, and R_1 is β-hydroxyethyl, β - (β' - hydroxyethoxy) - ethyl, β,γ - dihydroxypropyl, or α,γ - dihydroxyisopropyl are very readily soluble in water without forming ions. Their concentrated aqueous solutions may be mixed with cerebrospinal fluid in body cavities for roentgenographic examination of the cavities, and are well tolerated.

3,812,187

HYDRAZIDES

Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, New Brunswick, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 5, 1970, Ser. No. 9,052, now Patent No. 3,715,382. Divided and this application June 24, 1971, Ser. No. 156,548

Int. Cl. C07c *103/86*

U.S. Cl. 260—557 B **5 Claims**

Diastereomers of N-acyl α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid derivatives which can be separated and hydrolyzed to give compounds useful as decarboxylase inhibitors.

3,812,188

PURIFICATION OF 7-CHLOROTETRACYCLINE

William M. Ziegler, Clementon, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,702

Int. Cl. C07c *103/19*

U.S. Cl. 260—559 AT **10 Claims**

This disclosure describes a process for the purification of 7-chlorotetracycline free base or an anionic salt thereof by suspending the free base or the anionic salt thereof in a concentrated aqueous solution of urea thus forming 7-chlorotetracycline-urea complex and selectively removing the impurities, and regenerating purified 7-chlorotetracycline free base or a mineral acid salt thereof from the resultant complex.

3,812,189

N-(2,2-DILOWERALKOXYALKYL) - 2,2 - DILOWERALKOXYLOWERALKANAMIDINES AND THEIR ACID ADDITION SALTS

Jackson Pollard English, Grantham, N.H., and Gerald Berkelhammer, Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 24, 1972, Ser. No. 274,560

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R **5 Claims**

The compounds N - (2,2-diloweralkoxyalkyl)-2,2-diloweralkoxyloweralkanamidines, the acid addition salts thereof and a method for their preparation, are described. A process for the preparation of imidazole-2-carboxaldehyde and 2-imidazolylalkyl ketones utilizing the above described compounds as intermediates are also described. The latter compounds are useful as intermediates in the preparation of 2-amino-5-(2-imidazolyl)-1,3,4-thiadiazoles, which are highly effective antibacterial and antiprotozoal agents.

3,812,190

CONVERSION OF ACROLEIN DIMER TO CYCLOPENTANONE

John P. Petrovich, Creve Coeur, and Donald A. Tyssee, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,833

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 A **8 Claims**

Cyclopentanone is prepared in high yields from acrolein dimer by a process comprising contacting acrolein dimer with a dehydrogenation catalyst on an acidic support at a temperature of from about 150° C. to about 400° C. Examples of a dehydrogenation catalyst include silica-alumina, oxides of nickel, oxides of copper, palladium, and mixed oxides of cobalt and nickel. Examples of an acidic support include silica, alumina, oxides of nickel, and silica-alumina. Cyclopentanone is an article of commerce useful in the production of glass-reinforced plastics, caulking compounds, perfumes and flavoring agents as well as an effective solvent for polyvinyl chloride resins.

3,812,191

PROCESS FOR PRODUCING DEVELOPERS FOR SILVER HALIDE IMAGE PATTERNS

Henry Bader, Newton Center, and Michael Feingold, Pinehurst, Mass., and Edwin G. Jahngen, Jr., Burlington, Vt., assignors to Polaroid Corporation, Cambridge, Mass.

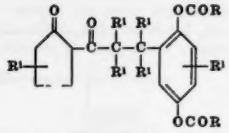
No Drawing. Filed July 19, 1971, Ser. No. 164,102

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 **10 Claims**

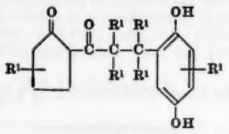
A novel process for producing compounds especially useful as developers for silver halide image patterns. Es-

sentially, the process of the invention involves the saponification of a compound of the following formula:



FORMULA 1.

in a non-aqueous alkaline medium followed by acidification to provide a compound conforming to the following formula:



FORMULA 2.

wherein the —OCOR groups at the ortho and para positions of the phenyl ring represent groups that can be substituted with or converted to hydrogen so as to provide hydroxy moieties in the ortho and para positions and R^1 represents a substituent which can be the same or different and which does not affect the functionality of the compound as a silver halide developing agent.

3,812,192

PROCESS FOR THE MANUFACTURE OF POLYTHIOBISPHENOLS

Rudolf Gabler, Uitikon-Waldegg, and Josef Studinka, Zurich, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

No Drawing. Filed May 15, 1972, Ser. No. 253,304

Claims priority, application Switzerland, May 26, 1971, 7,653/71

Int. Cl. C07c *149/18*

U.S. Cl. 260—608 **8 Claims**

A phenol which is unsubstituted at the position para to the hydroxy group or unsubstituted at at least one of the positions ortho to the hydroxy group is dissolved in a solvent, in the absence of hydrogen sulfide and catalysts, and while cooling to a temperature below 30° C. is reacted with disulfur dichloride. The solvent is an acid amide whose nitrogen atoms are completely alkylated. Polythiobisphenols are obtained in high yield.

3,812,193

PREPARATION OF 3,3',5,5'-TETRA-ISOPROPYL-4,4'-HYDROXYDIPHENYL

Donald Richard Randell, Stockport, and Peter Miles and Allan Geoffrey Virgin, Manchester, England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 9, 1971, Ser. No. 170,243

Claims priority, application Great Britain, Aug. 8, 1970, 38,316/70

Int. Cl. C07c *37/00*

U.S. Cl. 260—620 **4 Claims**

3,3',5,5'-tetra-isopropyl - 4,4' - dihydroxydiphenyl is prepared by oxidizing 2,6-di-isopropyl phenol with a ferric salt of a nonoxidizing acid. The compound is used as a stabilizer for gasoline.

3,812,194

NOVEL PROCESS FOR PREPARING 6-HALO-3-METHYLPHENOLS

Ira Starer, Somerville, Carroll Sherman Montgomery, Piscataway, and Edward John O'Bara, Manville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,036

Int. Cl. C07c *39/26*

U.S. Cl. 260—623 R **2 Claims**

This disclosure describes a multistep process for the preparation of 6-halo-3-methylphenols from 6-nitro-3-methylphenol; the products of the process being useful in the preparation of anti-allergenic agents.

3,812,195

PREPARATION OF DIMETHYL BERYLLIUM

Roy J. Laran, Greenwell Springs, and Paul Kobetz, Baton Rouge, La., and Robert W. Johnson, Jr., Savannah, Ga., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Original application Apr. 23, 1965, Ser. No. 451,694. Divided and this application Apr. 26, 1967, Ser. No. 651,333

Int. Cl. C07f *3/00*

U.S. Cl. 260—665 R **1 Claim**

A process of reacting aluminum trialkyls or alkali metal aluminum tetraalkyls with a beryllium halide to form a beryllium dialkyl, which may be pyrolyzed to form beryllium hydride, is disclosed. Beryllium hydride is a fuel component of solid propellants and also a source of hydrogen and of pure beryllium metal.

3,812,196

CATALYTIC STEAM DEALKYLATION

Masao Uchiyama and Norio Kaneko, Ibaraki, Japan, assignors to Mitsubishi Petrochemical Company Limited, Chiyoda-ku, Tokyo-to, Japan

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,640

Claims priority, application Japan, Nov. 30, 1970, 45/105,709, 45/105,710, 45/105,711

Int. Cl. C07c *3/58*

U.S. Cl. 260—672 **9 Claims**

An alkylaromatic hydrocarbon is dealkylated by contacting it, in the presence of steam and at a temperature ranging from 350 to 500° C., with a catalyst comprising nickel, and at least one metal selected from palladium, iron, iridium, rhodium, thallium, cerium, selenium, antimony, cadmium, tungsten, barium, sodium, potassium, and rhenium, supported on a carrier, preferably alumina.

3,812,197

METHOD FOR DISPROPORTIONATING HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, and John M. Crone, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

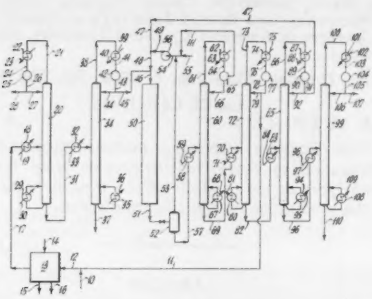
Filed Aug. 25, 1972, Ser. No. 283,678

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T **13 Claims**

The method of this invention permits disproportionation of a methyl benzene, such as toluene, to form a

product stream typically containing benzene and xylene



and the recovery of these products in high purity.

3,812,198

COMPLEXATION OF 2,6-DIMETHYLNAPHTHALENE WITH p-NITROBENZOIC ACID

John A. Hedge, Wilmington, Del., assignor to Sun Research and Development Co., Marcus Hook, Pa.

No Drawing. Filed Dec. 20, 1972, Ser. No. 317,013

Int. Cl. C07c 7/02

U.S. Cl. 260—674 N **17 Claims**

2,6-dimethylnaphthalene can be separated from other like hydrocarbons by complexing with p-nitrobenzoic acid.

3,812,199

DISPROPORTIONATION OF PARAFFIN HYDROCARBONS

Nai Yuen Chen, Cherry Hill, and Stanley J. Lucki, Runnemede, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed July 2, 1968, Ser. No. 741,916

Int. Cl. C07c 3/00

U.S. Cl. 260—676 R **8 Claims**

Disproportionation of paraffin hydrocarbons by contacting a paraffin hydrocarbon charge under disproportionation conditions with a crystalline zeolite catalyst and separating therefrom disproportionation products comprising products having a higher molecular weight than the paraffin hydrocarbon charge and products having a lower molecular weight than the hydrocarbon charge.

3,812,200

PROCESS FOR REACTIVATION OF SODA-LIME

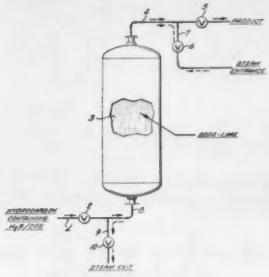
Edward H. Grey, Media, and Robert C. Shufelt, Brookhaven, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Aug. 23, 1972, Ser. No. 283,255

Int. Cl. C07c 11/00

U.S. Cl. 260—677 A **4 Claims**

A moisturizing medium, e.g. steam is injected into a soda-lime treatment bed after the soda-lime therein has been used to remove H_2S and/or COS impurities from a normally gaseous hydrocarbon feed stream. The soda-



lime is thereby reactivated resulting in a longer cycle life of the bed.

3,812,201

TEXTILE FINISHING COMPOSITION AND PROCESS

Alvin E. Bey, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,482

Int. Cl. C08g 37/38, 47/10

U.S. Cl. 260—824 R **9 Claims**

Application of a composition consisting essentially of a durable press resin and a carboxy functional siloxane to some textiles has been found to impart improved tear strength, abrasion resistance and flat appearance.

3,812,202

REACTION PRODUCT OF ACRYLAMIDE POLYMERS AND POLYPHENOLIC PRECURSOR

Howard J. Wright, Kansas City, Mo., assignor to Cook Paint and Varnish Company, Kansas City, Mo.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,878

Int. Cl. C08g 45/10, 37/16

U.S. Cl. 260—834 **11 Claims**

A resinous coating composition comprising the reaction product of (A) a polyphenolic precursor containing at least two phenolic hydroxyl groups obtained by reacting a phenol having at least two phenolic hydroxyl groups with a polyepoxide compound and (B) an acrylic copolymer of methylol acrylamide or methylol diacetone acrylamide with another ethylenically unsaturated monomer.

3,812,203

CHLOROPRENE RUBBER COMPOSITION AND METHOD OF PRODUCING THE SAME

Takashi Kadowaki, Kenji Itoyama, and Shoya Matsuzawa, Nishikubiki, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Original application Sept. 17, 1970, Ser. No. 73,174, now Patent No. 3,703,568. Divided and this application May 9, 1972, Ser. No. 264,701

Claims priority, application Japan, Sept. 24, 1969, 44/75,364

Int. Cl. C08d 9/10; C08g 37/16

U.S. Cl. 260—845 **3 Claims**

Chloroprene rubber composition consisting mainly of a mixture of 100 parts by weight of chloroprene polymer

and 0.1 to 20 parts by weight of polyvinyl alcohol. The chloroprene rubber composition can be used alone as an adhesive. An adhesive composition having a more excellent stability against the layer separation is obtained by adding a metal oxide, and a modified phenol resin and conventional additives to the rubber composition.

3,812,204

POLYMERIC COMPOSITION COMPRISING POLYVINYL CHLORIDE

Giulio Natta, Enrico Beati, and Febo Severini, Milan, and Silvio Toffano, Bergamo, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of application Ser. No. 12,462, Feb. 19, 1970, which is a continuation-in-part of application Ser. No. 375,663, June 16, 1964, both now abandoned. This application Apr. 28, 1972, Ser. No. 248,592

Int. Cl. C08f *15/00*

U.S. Cl. 260—878 R 1 Claim

Polymeric compositions comprising graft copolymers of vinyl chloride and from 2% to 25% by weight of an amorphous ethylene copolymer, which compositions are directly useable as produced, without solvent extraction, in the manufacture of shaped articles having commercially acceptable mechanical properties including impact strength, are provided. The compositions are obtained by polymerizing vinyl chloride in contact with the amorphous ethylene copolymer and an initiator of the vinyl chloride polymerization.

3,812,205

PROCESS FOR PREPARING GRAFTLINKED HETEROPOLYMER FILM

David L. Dunkelberger, Levittown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 27,995, Apr. 13, 1970. This application Sept. 20, 1972, Ser. No. 290,678

Int. Cl. B32b *27/30;* C08f *15/18*

U.S. Cl. 260—885 16 Claims

Production of heteropolymer latex particles wherein the particles consist essentially of a first-stage rubbery crosslinked emulsion polymer having a T_g below 10° C. comprising at least one C_1 to C_8 alkyl acrylate and a graftlinker and a second-stage thermoplastic polymer having a T_g above about 60° C. comprising a hard alkyl ester of methacrylic acid graftlinked to said first-stage by adding gradually a stream of said second-stage monomer to said first-stage and polymerizing rapidly the second-stage monomer. The polymer particles are preferably isolated, dried and converted into film using heat and pressure.

3,812,206

POLYFLUOROPOLYMERS

Ronald Eric Banks, Hazel Grove, and Robert Neville Haszelding, Disley, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

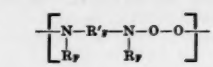
No Drawing. Filed Jan. 30, 1973, Ser. No. 327,840

Claims priority, application Great Britain, Jan. 31, 1972, 4,383/72

Int. Cl. C08f *29/16*

U.S. Cl. 260—890 22 Claims

A process for cross-linking a polyfluoropolymer containing pendant perfluorovinyl groups including the step of treating the polyfluoropolymer with an effective amount of a cross-linking agent including the structural unit:



wherein R'_F is a divalent polyfluoroalkylene group having a chain length of from 1 to 4 carbon atoms which may be substituted at one or more positions with chloro- or polyfluoroalkyl, chlorofluoroalkyl or polyfluorocycloalkyl groups containing up to six carbon atoms, and R_F is a monovalent straight or branched chain, or cyclic, polyfluoroalkyl group or a chlorofluoroalkyl group containing up to ten carbon atoms and the R_F groups are the same or different or is a divalent polyfluoroalkylene group having a chain length of from 1 to 4 carbon atoms which may be substituted at one or more positions with chloro- or polyfluoroalkyl, chlorofluoroalkyl or polyfluorocycloalkyl groups containing up to six carbon atoms; and the R_F groups are interconnected to form a cyclic structure.

3,812,207

MOLDING COMPOSITIONS HAVING IMPROVED ENVIRONMENTAL STRESS-CRACK RESISTANCE AND LOW-TEMPERATURE IMPACT STRENGTH

Rudolf Glaser, Ludwigshafen, Juergen Schmidtchen, Frankenthal, and Peter Bauer, Luwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Original application Oct. 22, 1971, Ser. No. 191,770. Divided and this application Nov. 24, 1972, Ser. No. 308,992

Int. Cl. C08f *37/04*

U.S. Cl. 260—897 A 5 Claims

Compositions of matter having improved environmental stress-crack resistance and low-temperature impact strength comprising (a) polyethylene, (b) polyisobutylene and (c) N,N′-distearoylethylenediamine. The compositions are used for electrical insulating purposes and the production of moldings.

3,812,208

STRUCTURAL ELEMENTS OF REDUCED INFLAMMABILITY

Franz Esser, Gundernhausen, Friedrich Hanstein, Gross-Zimmern, and Ludwig Hosch and Dieter Mueller, Darmstadt, Germany, assignors to Rohm GmbH, Darmstadt, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 9,253, Sept. 2, 1969. This application July 1, 1971, Ser. No. 159,031

Claims priority, application Germany, Aug. 31, 1968, P 17 94 058.8

Int. Cl. B29c *25/00;* C09k *3/28*

U.S. Cl. 260—899 9 Claims

Structural elements, such as for buildings, made of acrylates having enhanced flame resistance, said acrylates being mechanically worked, e.g. biaxially stretched, and having flame-inhibiting phosphorus compounds incorporated therein.

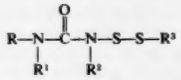
3,812,209

1-HYDROCARBYLDITHIO-3-ARYL UREAS

Melancthon Starr Brown, deceased, late of Berkeley, Calif. (by Gustave K. Kohn, administrator), assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 9, 1970, Ser. No. 88,106
Int. Cl. C07c *119/00*
U.S. Cl. 260—453 R 6 Claims

Compounds of the formula



wherein R is phenyl optionally substituted with halogens nitro groups, lower alkyl groups or lower alkoxy groups, R^1 and R^2 are hydrogen or lower alkyl and R^3 is a hydrocarbyl group of 1 to 14 carbon atoms free of aliphatic unsaturation optionally substituted with halogen atoms, nitro groups or alkoxy groups. The compounds are herbicidal.

3,812,210

VAPOR PHASE DECOMPOSITION OF METHYL FORMATE TO YIELD METHANOL

Buster W. Higdon, Gray; Charles C. Hobbs, and Michael J. Onore, both of Corpus Christi, all of Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,718
Int. Cl. C07c *27/00*, *29/00*
U.S. Cl. 260—638 R 5 Claims

An improved process is provided for the thermocatalytic decomposition of methyl formate to yield methanol and carbon monoxide as the major decomposition products. Methyl formate while in the gaseous phase and at a temperature of about 200° to 500°C. (preferably 250° to 400°C.) is contacted with a solid catalyst (described in detail herein) capable of promoting the desired decomposition reaction. In a preferred embodiment of the process a gaseous stream of methyl formate is continuously passed through a fixed bed of the catalyst while at the temperature indicated.

3,812,211

PROCESS FOR THE REACTION OF BROMOALKANES WITH INORGANIC CHLORIDES

Morris A. Johnson, and Kang Yang, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed July 16, 1971, Ser. No. 163,438
Int. Cl. C07c *17/20*
U.S. Cl. 260—658 R 2 Claims

The present invention relates to a method for conducting the reaction between bromoalkanes and inorganic chlorides wherein the reactions are heated in a reaction vessel in the presence of an activated charcoal catalyst.

3,812,212

PROCESS FOR INCREASING SELECTIVITY TO 1-BROMOALKANE IN THE ADDITION OF HYDROGEN BROMIDE TO OLEFINS

Ronnie D. Gordon, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 21, 1972, Ser. No. 265,075
Int. Cl. C07c *17/08*
U.S. Cl. 260—663 5 Claims

1-Bromoalkanes may be produced with improved selectivity by reacting anhydrous hydrogen bromide and a 1-olefin in the presence of a free radical initiator and an organic quaternary salt.

3,812,213

PREPARATION OF DIALKYL BERYLLIUM AND RECOVERY BY DISTILLATION

Crayton G. Hall, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Sept. 27, 1963, Ser. No. 312,835
Int. Cl. C07f *3/00*
U.S. Cl. 260—665 R 11 Claims

1. In the process for preparing a dialkylberyllium compound which comprises reacting an anhydrous beryllium halide wherein the halogen has an atomic number of from 17 to 53, inclusive, with an alkyl magnesium halide wherein the halogen has an atomic number of from 17 to 53, inclusive, and wherein the alkyl group contains from three to eight carbon atoms, in a solvent comprising an ether selected from the group consisting of aliphatic, alicyclic and heterocyclic ethers containing up to six carbon atoms in each hydrocarbon group, and separating the dialkylberyllium product from the crude reaction product, the improvement which comprises carrying out the separation step by diluting said reaction product with a hydrocarbon chaser having an initial boiling point in the range of 250° to 300°C. and a final boiling point in the range of 350° to 450°C., distilling off essentially all of the uncomplexed ether, and then distilling the dialkylberyllium product under reduced pressure, the quantity of said hydrocarbon chaser being sufficient to maintain in suspension the solid residue from the distillation of the said dialkylberyllium product.

3,812,214

HARDENABLE COMPOSITION CONSISTING OF AN EPOXY RESIN AND A METAL ACETYLACETONATE

Mark Markovitz, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 193,551, Oct. 28, 1971, abandoned. This application Mar. 13, 1973, Ser. No. 340,796
Int. Cl. C08g *45/00*
U.S. Cl. 260—830 TW 7 Claims

The cure rate of 1,2-epoxy resins containing more than one epoxy group per molecule can be controlled over a wide range of times by a catalytic hardener comprising from 0.025 to 5.0 percent based on the weight of the epoxy resin of a metal acetylacetonate and up to 15.0 percent by weight of the epoxy resin of a phenolic accelerator.

3,812,215

METHOD FOR MANUFACTURING VINYL CHLORIDE GRAFT POLYMERS

Shuniche Koyanagi; Hajima Kitamura, and Akiyoshi Maruyama, all of Niigata-ken, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation of Ser. No. 163,430, July 16, 1971, abandoned, which is a continuation of Ser. No. 843,747, Sept. 8, 1969, abandoned. This application Mar. 20, 1973, Ser. No. 342,937
Claims priority, application Japan, July 31, 1968, 43-53640
Int. Cl. C08f *15/40*
U.S. Cl. 260—878 R 5 Claims

A vinyl chloride graft polymer is obtained by polymerization of a vinyl chloride monomer with a multi-functional monomeric ester in the presence of an ethylenevinyl ester copolymer. Thus obtained graft polymer is improved in such properties as impact strength, weathering resistance and workability, and besides, minimizes the lowering of softening temperature and improved its gellation property and fluidity in molding.

3,812,216
SYNTHETIC RUBBER COMPOSITION
Hisatake Sato, and Hideo Hayashi, both of Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan
Filed Oct. 5, 1971, Ser. No. 186,769
Claims priority, application Japan, Oct. 20, 1970, 45-91653
Int. Cl. C08d 9/08; C08f 41/12
U.S. Cl. 260—887 6 Claims

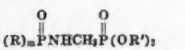
A synthetic rubber composition of excellent tackiness which comprises 100 parts by weight of a synthetic rubber and from 3 to 30 parts by weight of phenol modified resin obtained by polymerization of 100 parts by weight of hydrocarbon mixture, boiling within the range of 140° to 280° C, containing unsaturated hydrocarbons by-produced in cracking of petroleum and from 3 to 15 parts by weight of a phenolic compound, using from 0.05 to 5 parts by weight of boron trifluoride, its complex compound or aluminum chloride as catalyst.

3,812,217
POLYFLUOROCYCLOALKYL PHOSPHATES
Ronald C. Moyer, North Kingstown, R.I., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 39,175, May 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 844,197, July 23, 1969, abandoned. This application Mar. 22, 1972, Ser. No. 236,978
Int. Cl. C07f 9/08, 9/14
U.S. Cl. 260—924 23 Claims

Polyfluorocycloalkyl phosphate compounds, the method of preparing these polyfluorocycloalkyl phosphate compounds, and the use of these polyfluorocycloalkyl phosphate compounds as grease and oil resistant sizes are disclosed.

3,812,218
DIALKYL ALKYL AND CYCLIC PHOSPHORAMIDOMETHYL PHOSPHONATES
Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,799
Int. Cl. C07f 9/02; C07d 105/04
U.S. Cl. 260—926 6 Claims

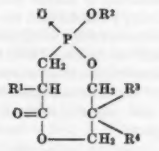
New compounds are disclosed of the formula:



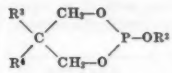
wherein R′ is phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1–6 carbon atoms, *m* is an integer from 1–2 wherein when *m* is 2, R is alkoxy of 1–8 carbon atoms and when *m* is 1, R is alkylene dioxy of 2–8 carbon atoms. The compounds of this invention are useful as flame retardant agents for textile materials and in the production of polymers and copolymers which possess flame retardant properties.

3,812,219
RING PHOSPHONATES
James S. Clovis, and Francis R. Sullivan, both of Warminster, Pa., assignors to Rohm and Hass Company, Philadelphia, Pa.
Filed May 3, 1971, Ser. No. 139,949
Int. Cl. C01d 105/04; C08f 45/58
U.S. Cl. 260—936 3 Claims

A nine-membered ring phosphonate compound having the formula



wherein R^1 is hydrogen or methyl, R^2 is phenyl or substituted phenyl wherein the substitution is one or more of halogen, nitro, lower alkyl, cyclohexyl, alkoxy, naphthoxy or phenyoxy and R^3 and R^4 are the same or different and are lower alkyl of up to eight carbon atoms, preferably methyl, is formed by the reaction of acrylic or methacrylic acid with a compound of the general formula



wherein R^2, R^3 and R^4 are as above. The ring phosphonates are useful for forming flame-retardant compositions from mixtures comprising the phosphonate and methyl methacrylate.

3,812,220
PHOSPHATE ESTERS OF HINDERED PHENOLS
Michael Robin, Colonia, N.J., and Sheldon R. Schulte, Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.
Filed May 15, 1972, Ser. No. 252,983
Int. Cl. C07f 9/12; B01j 1/18
U.S. Cl. 260—953 5 Claims

Reaction products of a phosphate ester-forming compound such as a phosphorous oxyhalide and a hindered bis phenol are obtained. Such products are useful as antioxidants in various compositions and materials.

3,812,221
PREPARATION OF W-AMINO-ALKANE PHOSPHONIC AND PHOSPHINIC ACID DERIVATIVES
Rudolf Braden, Odenthal-Scheuren; Udo Hendricks; Gunter Oertel, and Reinhard Schliebs, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 29, 1971, Ser. No. 158,088
Claims priority, application Germany, July 2, 1970, 2032712
Int. Cl. C07f 9/28
U.S. Cl. 260—968 1 Claim

Preparation of the title derivatives by hydrogenation of a salt of the corresponding ω-cyano-alkane phosphonic or phosphinic acid derivative.

3,812,222

PROCESS FOR THE MANUFACTURE OF ALKANE PHOSPHONIC ACID DIESTERS

Hans-Jerg Kleiner, Bad Soden/Taunus, and Siegbert Rittner, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 14, 1970, Ser. No. 98,052

Claims priority, application Germany, Dec. 16, 1969, 1963014; Sept. 2, 1970, 2043520

Int. Cl. C07f 9/40

U.S. Cl. 260—970 9 Claims

The known production of alkane phosphonic acid diesters from olefins and dialkylphosphites in the presence of free radical generators is improved by using α-olefins having an extremely low content of sulfur. Thus high yields and pure products are obtained within short reaction times. The known products are foam depressants, anticorrosives, oiladditives, dyeing adjuvants and organic intermediates, expecially for plant protecting agents.

3,812,223

PROCESS FOR PRODUCING THIO-OR DITHIO-PHOSPHORIC ACID SALTS

Hiroshi Tsuchiya, Oita, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed July 19, 1971, Ser. No. 164,090

Claims priority, application Japan, July 22, 1970, 46-64638

Int. Cl. C07f 9/02

U.S. Cl. 260—987 5 Claims

Thio- or dithio-phosphoric acid salts, which are indispensable intermediates for producing phosphoric acid esters of the thiol or dithiol type useful as agricultural chemicals, are produced by reacting a thionophosphoric acid ester with an alkali metal salt of a dithiocarbamic acid at 50° to 150°C in the presence of a solvent such as an aqueous or anhydrous alcohol, a Cellosolve, dimethylformamide, dimethyl sulfoxide, or the like.

3,812,224

PROCESS FOR THE PRODUCTION OF POROUS POLYMERIC MATERIALS

Albert Ernest Smith, and James Charles Ingram, both of Sarnia, Ontario, Canada, assignors to Polysar Limited, Sarnia, Ontario, Canada

Continuation of Ser. No. 22,387, March 24, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,318

Claims priority, application Canada, May 5, 1969, 050500

Int. Cl. B29d 27/00

U.S. Cl. 264—28 6 Claims

A porous cellular composition is made by freezing a plastically deformable or pourable system containing a solid polymer and a compatible liquid which is capable of freezing to a crystalline state and then subliming the liquid.

The composition contains interconnecting cells of not more than 1,000 microns in width and is suitable for the production of leather-like breathable sheets, filter elements and nonwoven fabrics.

3,812,225

METHOD OF MANUFACTURING FOAMED CROSS-LINKED POLYOLEFIN SLABS INVOLVING MULTIPLE EXPANSION TECHNIQUES AND DIRECT GAS PRESSURE

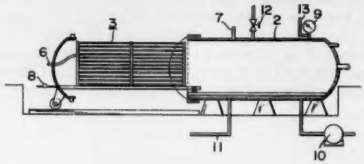
Kirokuro Hosoda, and Naonori Shiina, both of Tokyo, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Division of Ser. No. 778,443, Nov. 25, 1968, Pat. No. 3,651,183, which is a continuation-in-part of Ser. Nos. 442,523, March 24, 1965, abandoned, and Ser. No. 610,880, Jan. 23, 1967, abandoned, and Ser. No. 645,444, June 12, 1967, abandoned, and Ser. No. 792,180, Oct. 18, 1968, abandoned. This application Aug. 4, 1971, Ser. No. 169,037

Int. Cl. B29d 27/00

U.S. Cl. 264—54 21 Claims

A method of manufacturing polymer foam of polyolefin, rubber, or plastics other than polyolefin, such as polyvinyl chloride, polystyrene, polyacrylic acid, or the like, or mixtures thereof, and particularly for manufacturing such foam in the form of a foamed slab or foamed sheet, is disclosed. The foamed slab is produced by extruding a matrix containing a cross-linking agent and blowing agent, subjecting the matrix to heat and pressure to decompose the blowing agent, and cross-linking agent, and thereafter heating the partially expanded



matrix under atmospheric or other pressure to effect a secondary expansion. The foamed sheet is made by extruding a matrix containing a cross-linking agent and blowing agent and introducing same onto a support which contacts the surface of the matrix at a plurality of spaced locations to leave spaced regions of the matrix exposed, and thereafter subjecting the matrix to heat to cross-link and foam. A surface treatment for both the slab and sheet is provided to effect cross-linking of the surface regions prior to foaming.

3,812,226

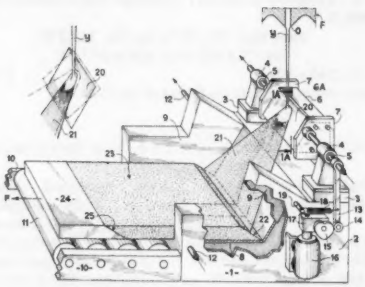
METHOD FOR PRODUCING OBJECTS FROM A MOLTEN CERAMIC PRODUCT

Jacques Marie Yves Le Clerc De Bussy, Bussy, 80 Piox, France

Continuation-in-part of Ser. No. 38,697, May 19, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,612

Int. Cl. B22c 23/08

U.S. Cl. 264—6 9 Claims



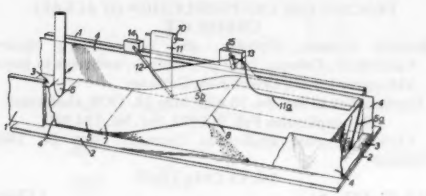
Method and device for producing objects from a continuous stream of molten ceramic product in which a shower of particles of the product is produced by allowing the stream of product to fall onto a cooled surface wherefrom a shower of particles produced is directed onto the object in course of formation. The heat of the particles causes them to weld to the already-formed part of the object.

3,812,227

METHOD OF PRODUCING A FLAT TOP SLAB OF FOAMED POLYURETHANE

James Brian Blackwell; Dennis Killen, and Victor Francis Hodgson, all of Yew St., Stockport, England

Continuation-in-part of Ser. No. 719,957, April 9, 1968, abandoned. This application Jan. 21, 1972, Ser. No. 219,645
Claims priority, application Great Britain, Dec. 13, 1967, 56752/67; June 9, 1967, 26718/67; Apr. 12, 1967, 16670/67
Int. Cl. B29d 27/04
U.S. Cl. 264—54 6 Claims



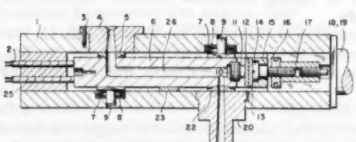
A method for the continuous production of slabs of polymeric foam. Slabs of foam are produced by depositing liquid foam reactants onto an open-topped continuous trough conveyor and a flat top surface on the foam is achieved by introducing guide sheets between the sides of the trough conveyor and the foam and raising and controlling the guide sheets so that they are always in accurate registration with the rising foam. The guide sheets are introduced downwardly into the trough conveyor and then passed around respective straight fold bars the attitudes of which are adjustable. The guide sheets thereafter follow upwardly-inclined paths, corresponding to the rising level of the foam, and are advanced by pull rolls which are also adjustable in attitude. The positions along the trough conveyor of the fold bars and the pull rolls can be adjusted. Preferably, the guide sheets are sheets of thin plastic material, e.g. polyethylene.

3,812,228

INJECTION MOLDING OF FOAMABLE THERMOPLASTIC POLYMERS USING A RETRACTABLE HOT RUNNER

Wladyslaw H. Skoroszewski, Manchester, England, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 55,651, June 17, 1970, Pat. No. 3,644,053. This application Jan. 17, 1972, Ser. No. 218,474
Claims priority, application Great Britain, July 17, 1969, 35994/69
Int. Cl. B29d 27/00; B29f 1/04, 1/05
U.S. Cl. 264—54 2 Claims



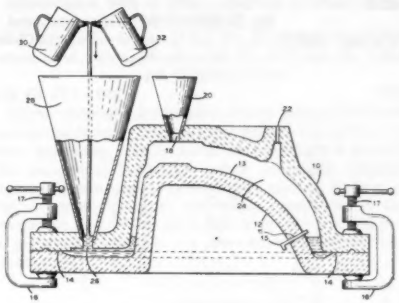
A mold feed system for injection molding thermoplastic materials comprises (1) an apertured back plate having a passage for reception of molten thermoplastic materials from an injection nozzle, (2) a feedplate having at least one feed passage adapted to supply thermoplastic material to at least one mold cavity and disposed between said feedplate and said back plate a movable runner member having a single or manifold channel to register communication between the back plate passage and each feedplate passage, said runner member being disposed in heat transfer relation to a source of heat and adapted to form a pressure tight seal of said channel and all of said passages when slid away from the said open position.

3,812,229

PROCESS FOR FORMING CERAMIC SANITARY WARE HAVING A STONE-LIKE APPEARANCE

Warren Gregory Anderson, New Orleans, La., assignor to American Standard Inc., New York, N.Y.

Division of Ser. No. 846,142, July 30, 1969, Pat. No. 3,634,179. This application Feb. 8, 1971, Ser. No. 113,712The portion of the term of this patent subsequent to Jan. 11, 1989, has been disclaimed.
Int. Cl. B28b 1/26
U.S. Cl. 264—60 7 Claims



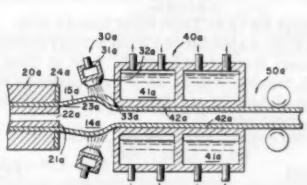
This invention comprises a process for making china or ceramic sanitary ware such as toilets, lavatories, bidets, and urinals, and similar articles which are provided with an appearance resembling natural stone or marble.

3,812,230

METHOD FOR CONTINUOUSLY MAKING A HOLLOW BOARD ARTICLE OF THERMOPLASTIC RESIN

Keiichi Takahashi, Ichikawa, Japan, assignor to Takan Kogyo Company Limited, Tokyo, Japan

Filed Sept. 24, 1971, Ser. No. 183,455
Claims priority, application Japan, Sept. 29, 1970, 45-84671; Sept. 29, 1970, 45-84672
Int. Cl. B29c 17/07, 25/00
U.S. Cl. 264—89 6 Claims



A hollow board article consisting of two opposed surface walls and integral partition walls interconnecting these two

surface walls and dividing the space therebetween into a plurality of cavities can be manufactured smoothly and rapidly by an apparatus comprising an extruder having a die provided with a die opening corresponding in shape to the cross section of said hollow board article. Shape-modifying means are disposed between the extrusion die and a size-forming device for modifying the shape of the freshly extruded article. The shape-modifying means is provided with fluid supply means to cool the hollow board article emerging from the die while said article is in a hot and deformable state, and to enlarge the angle of entry thereof into the size-forming device.

3,812,231

PROCESS FOR STABILIZING THE DRAWPOINT ON A FEED GODET ROLL IN DRAWING POLYESTER FILAMENTS

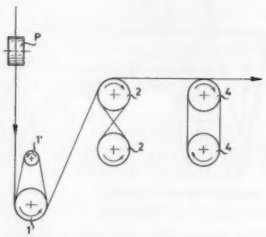
Klaus Hirschberg, and Lothar Kramer, both of Bad Hersfeld, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 7, 1972, Ser. No. 223,885

Claims priority, application Germany, Feb. 9, 1971, 2106020

Int. Cl. B29c *17/02*

U.S. Cl. 264—290 T 2 Claims



A process is described according to which filaments made of synthetic linear polyesters and having coarse titers are drawn at a high running speed from heated pairs of feed godets. One of the two feed godets is maintained at a temperature lower than that of the other godet. The difference in temperature is in the range of from 1° to 35°C. The draw point is stabilized on the hotter godet and regularity of the filaments is improved.

3,812,232

SOLVENT EXTRACTION PROCEDURE FOR SEPARATING SAMARIUM FROM NEODYMIUM

Donald J. Bauer; Roald E. Lindstrom, both of Reno, and Lawrence E. Schultze, Sparks, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 15, 1972, Ser. No. 280,923

Int. Cl. C01f *17/00*

U.S. Cl. 423—21 3 Claims

Separation of mixtures of metals, particularly complex lanthanide mixtures, in aqueous solution is accomplished by means of a process comprising total extraction of metal values into an organic extractant, and subsequent selective stripping of one or more of the metal values into an aqueous phase.

3,812,233

PROCESS FOR SEPARATING CERIUM CONCENTRATE FROM ORES

Larry K. Duncan, Chattanooga, Tenn., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 29, 1965, Ser. No. 517,346

Int. Cl. C01g *57/00*; C22b *59/00*

U.S. Cl. 423—21 5 Claims

A process for separating cerium from the other rare earth values in bastnasite ore by roasting the ore followed by leaching with dilute hydrochlorde acid under carefully controlled conditions.

3,812,234

PROCESS FOR THE PRODUCTION OF ALKALI-CHROMATE

Heinrich Schafer, Opladen, and Hans Georg Nieder-Vahrenholz, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

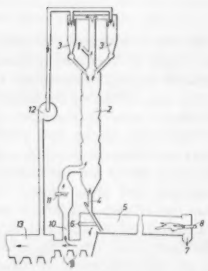
Continuation of Ser. No. 38,426, May 18, 1970, abandoned.

This application Feb. 9, 1972, Ser. No. 224,980

Claims priority, application Germany, May 24, 1969, 1926660

Int. Cl. C01g *37/00*

U.S. Cl. 423—61 7 Claims



Process for the production of alkali chromate from chromium containing materials, e.g. chromium ore under oxidising conditions with alkali, e.g. sodium carbonate, sodium hydroxide, sodium hydrogen carbonate, potassium carbonate and the like optionally in the presence of the usual diluents, e.g. dolomite, iron oxide and/or recycled treatment residue previously recovered from the process at temperatures between about 900° and 1,200° C in directly heated furnaces, wherein the chromium containing material is initially heated under fluidising conditions in a separate heating zone bypassing countercurrent to the exhaust gases from the directly heated furnace to temperatures of from about 500° to 1,100° C.

3,812,235

PROCESS FOR TREATING MAGNESIUM-BASE WASTE SULFITE LIQUOR

Murry Clinton Robinson, Don Mills, Ontario, Canada, assignor to Spring Chemicals Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 798,616, Feb. 12, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,913

Claims priority, application Canada, Feb. 12, 1968, 12199

Int. Cl. D21c *11/00*

U.S. Cl. 423—158 4 Claims

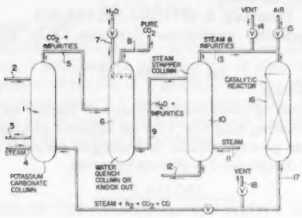
The amount of calcium contained in magnesium-base waste sulfite liquor is reduced by precipitating the calcium as calcium sulfite and separating the precipitate from the remaining waste sulfite liquor solution. The precipitation is caused by dissolving in the waste sulfite liquor (1) additional calcium, (2) additional magnesium, and (3) a source of sulfite ions. By "additional" calcium and magnesium is meant amounts greater than that contained in the magnesium-base waste sulfite liquor obtained from the pulping process.

3,812,236

REMOVAL OF AMMONIA AND ORGANIC IMPURITIES FROM AN AMMONIA PLANT EFFLUENT

Harry A. Adams, Bedford Heights; Kumar Kunchal, North Ridgeville, and James L. Callahan, Bedford Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed June 22, 1972, Ser. No. 265,163
Int. Cl. B01d 53/34
U.S. Cl. 423—237 5 Claims



Ammonia and organic impurities are removed from an ammonia plant effluent consisting mainly of steam by treating the effluent with an oxidation catalyst which oxidizes the impurities to harmless products of nitrogen, water and carbon dioxide.

3,812,237

BERYLLIUM HYDRIDE CONTAINING STABILIZING AGENTS

Warren B. Kirsch, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 775,580, Nov. 8, 1968, abandoned. This application Dec. 17, 1971, Ser. No. 209,473
Int. Cl. C01b 6/00
U.S. Cl. 423—266 10 Claims

Beryllium hydride is stabilized against hydrolysis by the addition to the hydride or to the water of a small quantity of a suitable additive. Preferred additives are (1) alkali or alkaline earth metal salts of long-chain aliphatic carboxylic acids, (2) alkali metal salts of inorganic oxy acids, (3) aliphatic or cycloaliphatic alcohols or phenols or (4) alkali metal, magnesium or calcium salts of alkylbenzene sulfonic acids.

3,812,238

EXTRACTION OF BORON FROM AQUEOUS SOLUTIONS WITH SALICYIC ACID DERIVATIVES AND ISOAMYL ALCOHOL

Edward A. Grannen, Upland, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Aug. 25, 1971, Ser. No. 175,007
Int. Cl. B01j 9/22
U.S. Cl. 423—283 11 Claims

A process for extracting boron from aqueous boron containing solutions by contacting the aqueous solution with a substantially water immiscible salicylic acid derivative or a salt thereof, nuclear substituted with an alkyl, aryl, alkaryl, or cycloakyl radical wherein the derivative has at least 11 carbon atoms in a water immiscible solvent comprising isoamyl alcohol in the range of from 10 to 100% by volume. Preferably, the balance of the solvent is an inexpensive water immiscible petroleum cut. Boron is sequestered by the salicylic acid derivative and the isoamyl alcohol has a synergistic effect in enhancing the proportion of boron extracted.

3,812,239

PREPARATION OF SUBMICRON TITANIUM CARBIDE

Larry R. Swaney, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 860,966, Sept. 25, 1969, which is a continuation-in-part of Ser. No. 762,821, Sept. 26, 1968, Pat. No. 3,485,586. This application Aug. 24, 1970, Ser. No. 66,176The portion of the term of this patent subsequent to Dec. 23, 1986, has been disclaimed.
Int. Cl. C01b 31/30
U.S. Cl. 423—440 14 Claims

Titanium carbide, predominantly in the form of small cubic crystals and having a weight average particle size in the range of from 0.04 to 0.9 micron, is formed by reacting, in the vapor state, titanium halide, reducing agent and carbon source at carbide-forming temperatures. Control and variation of the weight average particle size produced in the above range is accomplished by introducing into the reaction zone from 1 to 100 moles of auxiliary gas per mole of titanium halide reactant.

3,812,240

PRODUCTION OF HIGHLY ORDERED GRAPHITE PARTICLES

Mack P. Whittaker, Johnson City, and Lloyd I. Grindstaff, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 26,142, April 6, 1970, abandoned. This application Oct. 13, 1971, Ser. No. 188,941
Int. Cl. C01b 31/04
U.S. Cl. 423—448 5 Claims

Highly ordered graphite particles are prepared by heating a mesophase-forming pitch to form discrete mesophase spherulites, separating, and thereafter carbonizing and graphitizing the mesophase spherulites while preventing coalescence thereof. Coalescence is prevented by coating, surface oxidizing, or carbonizing the mesophase spherulites in such a manner so as to isolate each spherulite. The graphite product is particularly useful in the fabrication of nuclear fuel elements.

3,812,241

PROCESS FOR PREPARING ALUMINUM TRICHLORIDE

Luigi Piccolo, Milan; Marcello Ghirga, Bresso, and Benedetto Calcagno, Milan, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Apr. 24, 1972, Ser. No. 246,784
Claims priority, application Italy, Apr. 30, 1971, 23910/71
Int. Cl. C01f 7/58
U.S. Cl. 423—495 6 Claims

Anhydrous aluminium chloride is made by the action of chlorine or gaseous hydrogen chloride on a fluidised bed of aluminium particles in the presence of a powdered inert material having a specific surface area of 0.01 to 0.1 sq.m/g and a bulk density of 1.1 to 2.4 g/cc.

3,812,242

PROCESS FOR THE SIMULTANEOUS PRODUCTION OF SULPHUR DIOXIDE AND CONCENTRATED AQUEOUS SULPHURIC ACID

Filippo Barilli; Giorgio Cozza, and Vittorio Bareggi, all of Milan, Italy, assignors to Societe Italiana Resine S.p.A., Milan, Italy

Continuation of Ser. No. 28,936, April 15, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,248
Claims priority, application Italy, Apr. 19, 1969, 15796/69
Int. Cl. C01b 17/72, 17/50
U.S. Cl. 423—530 4 Claims

Ferrous sulphate heptahydrate by-product is 40–60% dehydrated, then converted to the monohydrate by heating with decomposition gases from subsequent roasting with pyrites. SO_3 is then removed from the gases by washing with sulphuric acid of at least 75% concentraton.

3,812,243

COMBINED PROCESS FOR RECOVERING S FROM H_2S IN CLAUS PLANT AND TREATING TAILGAS TO REMOVE H_2S AND SO_2

Leslie H. Landrum, Kansas City, Mo., and Robert L. Huppe, Shawnee Mission, Kans., assignors to J. F. Pritchard and Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 44,790, June 6, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,660

Int. Cl. C01b *17/04*

U.S. Cl. 423—574 8 Claims

Discharge of sulfur compounds into the air in the tailgas from a Claus plant is substantially eliminated by first burning the acid gas delivered thereto with less than an amount of oxygen required to oxidize one-third of the H_2S supplied so that the ratio of H_2S to SO_2 in the hot tailgas is greater than normal and preferably of the order of about 4:1 up to about 10:1. The hot tailgas is next quenched with water to lower the underflow from the quench up to about 130° F. or lower thereby condensing sulfur to solid form and water vapor to liquid thus producing a gaseous effluent substantially devoid of SO_2 since the excess of H_2S with respect to SO_2 in the tailgas drives the reaction therebetween to substantial completion. Sulfur in solid form is recovered from the underflow effluent while the overhead quench effluent is treated with a regenerable quinone absorption agent to remove residual sulfur compounds therefrom. Sulfur is removed from the absorption agent in conjunction with regeneration thereof and then combined with the sulfur removed from the water quench underflow.

3,812,244

PREPARATION OF ALUMINUM HYDRIDE

Donald L. Schmidt, Midland; Arthur L. Daniels, Coleman, and Ronald V. Petrella, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 414,052, Nov. 20, 1964, abandoned. This application Mar. 22, 1966, Ser. No. 538,170

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 2 Claims

A novel method for preparing metal hydrides, particularly aluminum hydride and aluminum halohydrides, by the direct reaction of a metal hydride with a metal chloride. In one embodiment carrier liquids which are a non-solvent for the metal hydride reactant can be employed.

3,812,245

NOVEL COMPOSITIONS FOR RADIOTRACER LOCALIZATION OF DEEP VEIN THROMBI

Mary Ann Dugan, Philadephia, Pa., assignor to Research Corporation, New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,100

Int. Cl. A61k *27/04*; G01t *1/20*

U.S. Cl. 424—1 11 Claims

There are provided radiolabeled enzymes, namely ^{99m}Tc-Streptokinase and Urokinase which have thrombolytic activity and in view of their propensity to accumulate at the location of the thrombi provide an effecient means of locating said thrombi.

3,812,246

COSMETIC SKIN COLORING COMPOSITIONS CONTAINING AMINATED γ-DIALDEHYDES

Guy Vanlerberghe, Montjay-la-Tour par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to Societe Anonyme dite L'Oreal, Paris, France

Filed Dec. 20, 1971, Ser. No. 210,217

Claims priority, application Luxembourg, Dec. 24, 1970, 62317

Int. Cl. A61k *9/06*; A61l *23/00*; A61k *7/02*

U.S. Cl. 424—59 3 Claims

Aminated γ-dialdehyde and the quaternary ammonium salts thereof are prepared by acid hydrolysis of their respective corresponding 2,5-dialkoxy 3-amino 4-hydroxy tetrahydrofurans or by acid hydrolysis of their respective corresponding tetraalkyl acetals. The aminated γ-dialdekydes and the quaternary ammonium salts thereof are usefully employed in cosmetic composition to tan the skin or to strengthen or restructure the hair.

3,812,247

METHOD OF OXIDATIVE TREATMENT OF HUMAN HAIR

Arnold Heinz, Hilden, and Dieter Kuhling, Monheim, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthauser, Germany

Filed Aug. 2, 1971, Ser. No. 168,404

Claims priority, application Germany, July 31, 1970, 2038106

Int. Cl. A61k *7/12*

U.S. Cl. 424—62 9 Claims

The method of oxidative treatment of human hair which comprises treating said hair with an aqueous solution of (1) water-soluble peroxyhydrates or hydrogen peroxide and (2) an activator diacylated 2,5-diketopiperazine.

3,812,248

ANTI-HERPES VIRUS TREATMENT

William Regelson, Richmond, Va., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 54,022, July 10, 1970, abandoned, and a continuation-in-part of Ser. No. 716,257, March 6, 1968, abandoned, and a continuation-in-part of Ser. No. 577,675, Sept. 7, 1966, abandoned. This application Jan. 14, 1972, Ser. No. 218,026

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 2 Claims

Certain water-soluble copolymers prepared from divinyl ether and maleic anhydride have been found to suppress herpes virus. Administration of said copolymers not only suppresses growth in infected animals but also increases resistance to virus infection in healthy animals by stimulating the production of interferon.

3,812,249

ANTIBIOTIC BL580

John Henry Edward James Martin, New York, N.Y., and Sidney Kantor, Lawrence Township, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,383

Int. Cl. A61l *21/00*

U.S. Cl. 424—121 4 Claims

This disclosure describes two new antibiotics, designated BL580α and BL580β, produced in a microbiological fermentation under controlled conditions using a new strain of *Streptomyces hygroscopicus* and mutants thereof. The new antibiotics are active antimalarial and anticoccidial agents.

3,812,250

ANTIFUNGAL SUPPOSITORY AND METHOD OF TREATING FUNGUS INFESTATIONS

Emilien Aubert, 3105 Rue Fendall, Montreal, Quebec, and Jacques Des Rosiers, 6284 Rue Cairns, Ville D'Anjou, Quebec, both of Canada

Filed Mar. 4, 1971, Ser. No. 121,217

Int. Cl. A61j *3/08*; A61k *9/02*

U.S. Cl. 424—148 9 Claims

A vaginal suppository comprising gentian violet in an amount of 0.000017 to 0.001 weight percent, boric acid in an amount of 1 to 5 weight percent, gelatin in an amount of 15 to 35 weight percent, a non-ionic surfactant of the octylphenoxyethanol type, in an amount of 0.05 to 1 weight percent, and

water. Also disclosed is a method of treating vaginal fungus infestations comprising administering a vaginal suppository having the above composition. It should be administered daily before bed time.

3,812,251
STABILIZED AQUEOUS COMPOSITION
Hiroyuki Mima, Nishinomiya, and Toichiro Matsuzaki, Ikeda, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 689,276, Dec. 11, 1967, abandoned. This application Apr. 12, 1971, Ser. No. 133,380
Claims priority, application Japan, Dec. 10, 1966, 41-81127
Int. Cl. A61k *15/12*
U.S. Cl. 424—148 12 Claims

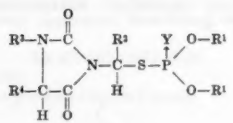
An aqueous composition comprising an ascorbic acid phosphate is stabilized by the addition of boric acids and/or their water-soluble salts in a quantity in terms of orthoboric acid of at least about 0.6 mole per mole of the ascorbic acid phosphate and of from about 0.03 to about 3 percent based on the weight of the water in the composition.

3,812,252
METHOD OF TREATING WOUNDS WITH A MEDICINAL DRESSING
Anthony N. Silvetti, 930 N. Ashland, River Forest, Ill.
Continuation-in-part of Ser. No. 102,942, Dec. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 770,414, Oct. 25, 1968, abandoned. This application Sept. 8, 1972, Ser. No. 286,741
Int. Cl. A61k *27/00*
U.S. Cl. 424—180 5 Claims

A method for use in the treatment wounds; e.g., second and third degree burns, stasis ulcers, trophic lesions such as decubitus ulcers, severe cuts and abrasions, employing a medicinal dressing containing as an essential ingredient a sterile, purified starch hydrolysate material having a Dextrose Equivalent of less than about 35, and preferably between about 5 to about 25.

3,812,253
O,O-DI(C_1 AND C_2 ALKYL) PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE ESTERS AS INSECTICIDES AND ACARICIDES
Joel D. Jamison, Mountainside, N.J., assignor to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 136,251, April 21, 1971, Pat. No. 3,741,978, which is a continuation-in-part of Ser. No. 694,883, Jan. 2, 1968, abandoned. This application Oct. 27, 1972, Ser. No. 301,707
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 10 Claims

Disclosed are compounds of the formula:



in which Y is O or S, each R^1 is selected from the group consisting of CH_3 or C_2H_5, and R^2, R^3 and R^4 are H or CH_3 with at least one of R^2 and R^3 being CH_3, and the use of these compounds as insecticides and acaricides.

3,812,254
CONTROL OF PYTHIUM SPP. AND SCLEROTIUM SPP. USING AZIDES
William C. McConnell, Griffin, Ga., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 25, 1971, Ser. No. 157,028
Int. Cl. A01n *9/20*
U.S. Cl. 424—226 19 Claims

Alkali metal azides, alkaline earth metal azides, ammonium azide, or mixtures thereof are used to control Pythium spp. and Sclerotium spp.

3,812,255
METHODS AND COMPOSITIONS FOR IMPROVING THE FEED INTAKE OF MEAT PRODUCING ANIMALS
Clifton A. Baile, Glen Mills; Carol Lynn McLaughlin, Malvern, and Robert Lee Webb, West Chester, all of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.
Filed Sept. 29, 1972, Ser. No. 293,687
Int. Cl. A61k *27/00*
U.S. Cl. 424—244 10 Claims

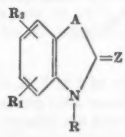
New methods and compositions for inducing polyphagia in immature, meat producing animals are described utilizing certain dibenz[b,f]azepines as active ingredients. Particularly useful ingredients are 10,11-dihydro-5-H-dibenz[b,f]azepine and 5-H-dibenz[b,f]azepine.

3,812,256
NOVEL METHOD FOR LOWERING BLOOD PRESSURE IN MAMMALS
William Vincent Curran, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 151,155, June 8, 1971, abandoned. This application June 5, 1972, Ser. No. 259,704
Int. Cl. A61l *27/00*
U.S. Cl. 424—250 4 Claims

This disclosure describes a method of lowering blood pressure in mammals by the administration of compositions containing as the active component certain 6-(substituted-phenyl)-5-methyl-4,5-dihydro-3(2H)-pyridazinones.

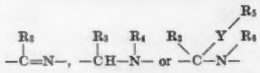
3,812,257
URICOSURIC AGENT
Michihiro Yamamoto; Shunji Aono; Hiroshi Nakatani, all of Toyonaki; Shigeaki Morooka; Masao Koshiba; Shigeho Inaba, all of Akira Aisaka, Minoo, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Apr. 7, 1972, Ser. No. 242,215
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 20 Claims

Excretion of uric acid from the body can be promoted by administering an effective amount of a quinazoline derivative represented by the formula

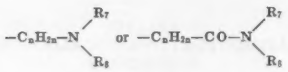


wherein R is a hydrogen atom, a lower alkyl group, a lower alkenyl group, an aralkyl group, a cycloalkyl group, a lower cycloalkylalkyl group, a lower alkoxyalkyl group, a lower alkanoyloxyalkyl group, a lower alkylthioalkyl group or a group of the formula $-C_nH_{2n}-B$ (wherein n is zero or an integer of 1 to 3; B is a saturated or unsaturated heterocyclic ring which may

contain one or two hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur) R_1 and R_2 are individually a hydrogen atom, a lower alkyl group, a lower alkoxy group, a trifluoromethyl group, a nitro group, a lower alkylthio group, a lower alkylsulfonyl group or a halogen atom; Z is an oxygen atom or a sulfur atom; and A is a group of the formula,

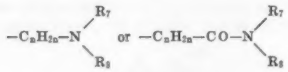


wherein R_3 is a phenyl group, a substituted phenyl group, a cycloalkyl group, a pyridyl group, a pyrrolyl group, a furyl group or a thienyl group; R_4 and R_5 are individually a hydrogen atom, a lower alkyl group, a lower alkenyl group, an aralkyl group, a cycloalkyl group, a lower cycloalkylalkyl group, a lower hydroxyalkyl group, a lower alkanoyloxyalkyl group, a lower alkoxyalkyl group, a lower alkylthioalkyl group, a phenyl group, a substituted phenyl group or a group of the formula



(wherein n is an integer of 1 to 3; R_7 and R_8 are individually the same or different lower alkyl group, provided that R_7 and R_8 may form together with the adjacent nitrogen atom a five- or six-membered heterocyclic ring, which may further contain another nitrogen or oxygen atom); Y is an oxygen atom or a group of the formula

(wherein R_9 is a hydrogen atom or a lower alkyl group); R_6 is a lower alkyl group, a lower alkenyl group, an aralkyl group, a cycloalkyl group, a lower cycloalkylalkyl group, a lower hydroxyalkyl group, a lower alkanoyloxyalkyl group, a lower alkoxyalkyl group, a lower alkylthioalkyl group, a phenyl group, a substituted phenyl group or a group of the formula



(wherein n is an integer of 1 to 3; R_7 and R_8 are individually the same or different lower alkyl group, provided that R_7 and R_8 may form together with the adjacent nitrogen atom a five- or six-membered heterocyclic ring, which may further contain another nitrogen or oxygen atom); moreover R_5 and R_6 may form a five- to eight-membered heterocyclic ring together with the adjacent Y and nitrogen atom and the carbon atom attached to both of them, and said heterocyclic ring may contain another nitrogen or oxygen atom, and further it may be optionally substituted by one or two lower alkyl groups, which may be joined to form a benzene or cyclohexane ring, or the non-toxic salts thereof.

3,812,258

PHARMACEUTICAL COMPOSITION ESSENTIALLY CONTAINING AND METHOD OF TREATMENT WITH, 3 BETA-ACETOXY 11-OXO NOROLEANENE-(12) 20 BETA-CARBOXYLIC ACID N-METHYL PIPERIDOL-(4) ESTER

Helmut Kraft, Neckarhausen; Frank Zimmermann, Mannheim, and Hans-Peter Hofmann, Ludwigshafen, all of Germany, assignors to Knoll AG, Chemische Fabriken, Ludwigshafen/Rhein, Germany

Division of Ser. No. 174,924, Aug. 25, 1971, Pat. No. 3,758,484. This application Nov. 27, 1972, Ser. No. 309,750

Claims priority, application Germany, Sept. 2, 1970, 2043479

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **3 Claims**

3-B-Acetoxy 11-oxo noroleanene-(12) 20B-carboxylic acid N-methyl piperidol-(4) ester and physiologically tolerable acid addition salts thereof that are orally administerable and have superior inflammation inhibiting and ulcer inhibiting properties.

3,812,259

ANIMAL FEED AND PROCESS

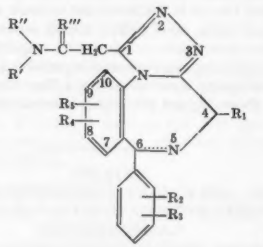
Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 9, 1971, Ser. No. 170,317

Int. Cl. A61k *27/00*

U.S. Cl. 424—269 **6 Claims**

An animal feed for increasing meat, milk, or egg production comprising a compound of the group consisting of a compound of the formula:



Formula I

wherein R′ and R″ are hydrogen, or alkyl of one to three carbon atoms, inclusive, or together

are pyrrolidino, piperidino, hexamethyleneimino, or morpholino; R‴ is

or oxygen; wherein R_1 is hydrogen or alkyl, defined as above; wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl defined as above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, and dialkylamino, in which the carbon chain moiety is

of one to three carbon atoms, inclusive, and in which the 5 to 6 nitrogen carbon linkage is selected from the group consisting of double bonds and single bonds, with the proviso that the linkage is always a double bond whenever R'' is oxygen; and the pharnacologically acceptable acid addition salts in combination with the nutrient feed.

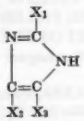
3,812,260

2,4,5-HALOGENIMIDAZOLES FOR COMBATING INSECTS AND ACARINA

Henry Martin, Basel, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Sept. 29, 1970, Ser. No. 76,635
Claims priority, application Switzerland, Oct. 8, 1969, 15136
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 **4 Claims**

The use of 2,4,5-halogenimidazoles of the formula



wherein X_1, X_2 and X_3 each denote a halogen atom, with the proviso that at least one of the substituents X_1, X_2 and X_3 is fluorine, bromine or iodine, for combating harmful insects and representatives of the ordr Acarina.

3,812,261

METHOD OF PRODUCING TRANQUILIZATION WITH DIOXOLANYL ALCOHOLS AND THEIR HALOGEN DERIVATIVES

Ludgwig A. Hartmann, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 235,024, March 15, 1972, abandoned. This application Mar. 28, 1972, Ser. No. 238,955
Int. Cl. A61h *27/00*
U.S. Cl. 424—278 **11 Claims**

A method of producing tranquilization in animals by administering an effective amount of a dioxolanyl alcohol or a 4- or 4,5-halogen derivative thereof is disclosed. All of the subject dioxolanyl compounds are also substituted in the 2-position with two perhalogenated alkyl groups.

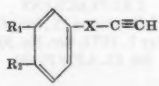
3,812,262

SUBSTITUTED PROPIOLOPHENONES USED AS PLANT FUNGICIDES

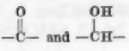
Madhukar S. Chodnekar, Basel; Hans Thommen, Therwil, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 87,316, Nov. 5, 1970, Pat. No. 3,705,177. This application Mar. 27, 1972, Ser. No. 238,533
Claims priority, application Switzerland, Nov. 14, 1969, 16957/69
Int. Cl. A01n *9/24, 9/28*
U.S. Cl. 424—282 **6 Claims**

Compounds represented by the formula



wherein one of R_1 and R_2 represents a member selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy or propynyloxy and the other represents a member selected from the group consisting of halogen, hydroxy, lower alkyl, lower alkoxy or propynyloxy or R_1 and R_2 together represent a lower alkylenedioxy group, X is a member selected from the group consisting of



are used for combatting plant fungi, nematodes and insects.

3,812,263

SYNERGISTIC COMPOSITIONS OF PHARMACEUTICALLY ACTIVE SUBSTANCES

Gilbert Gilbertson, Cresskill, N.J., assignor to Foritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,283
Int. Cl. A61k *27/00*
U.S. Cl. 424—282 **3 Claims**

Mixtures of certain 2,2-disubstituted-1,3-propanediol-dicarbamates, such as meprobamate, and certain 1-substituted-2,2-dialkyl-1,3-propanediol monocarbamates produce a narcosis effect when administered to mammals. A greater narcosis would be obtained by such a mixture than that expected by the sum of the effects of each component of such mixture.

3,812,264

METHOD OF PRODUCING A CARRIER FOR A SCINTIGRAPHIC PREPARATION AND SCINTIGRAPHIC PREPARATIONS INCLUDING SAID CARRIER

Jean-Paul Nouel, Boisguillaume, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,989
Claims priority, application France, May 5, 1969, 6914129
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **5 Claims**

Scintigraphic carriers are obtained by sensitizing red blood corpuscles by means of a stannous chloride solution having a physiological pH. The carriers are then labelled with radio-active pertechnetate. The labelling efficiency is appreciably higher than in the known methods.

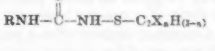
3,812,265

FUNGICIDAL N-POLYHALOVINYLTHIO UREAS

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

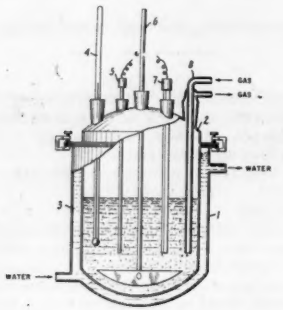
Division of Ser. No. 789,596, Jan. 7, 1969, Pat. No. 3,652,630. This application June 30, 1971, Ser. No. 163,525
Int. Cl. A01n *9/12*
U.S. Cl. 424—322 **5 Claims**

Ureas of the formula



in which R is hydrogen, hydrocarbyl radicals of one to 15 carbon atoms which are free of aliphatic unsaturation and have zero to three halogen substituents, X is Cl or Br and *a* is 2 or 3 are biologically active against fungi and aquatic weeds.

3,812,266
GREEN TEA CONVERSION USING TANNASE AND NATURAL TEA ENZYMES
Gary Warner Sanderson, Englewood, N.J., and Philip Coggon, Orangeburg, N.Y., assignors to Thomas J. Lipton Inc., Englewood Cliffs, N.J.
Continuation-in-part of Ser. No. 222,231, Jan. 31, 1972, abondoned. This application Aug. 7, 1973, Ser. No. 386,287
Int. Cl. A23f 3/00
U.S. Cl. 426—52 15 Claims



Green tea, and specifically fresh green tea leaf, is comminuted, placed in aqueous suspension, treated with tannase, and thereafter converted to black tea to provide black tea extracts of improved characteristics.

3,812,267
EXTRUDED PROTEINACEOUS MATERIALS
William T. Atkinson, Minneapolis, Minn., assignor to Archer Daniel Midland Company, Minneapolis, Minn.
Continuation of Ser. No. 787,244, Dec. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 587,939, Aug. 17, 1966, which is a continuation-in-part of Ser. No. 369,189, May 21, 1964, abandoned. This application Sept. 17, 1971, Ser. No. 181,602. The portion of the term of this patent subsequent to Jan. 6, 1987, has been disclaimed.
Int. Cl. A23j 3/00; A23l 1/20, 1/325
U.S. Cl. 426—104 3 Claims

Meat substitute food products comprising extruded protein materials containing a mixture of solvent-extracted oil seed material (e.g. soy protein) and fish protein concentrate.

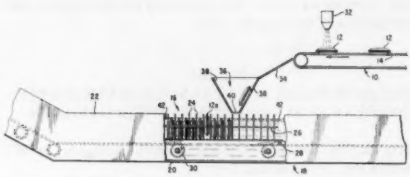
3,812,268
COMPRESSED COMPOUNDED FOOD PRODUCT AND METHOD OF MAKING SAME
Harold Corey, Teaneck; Abraham Bakal, Rockaway; Kurt Konigsbacher, Short Hills, and Daniel Schoenholz, Basking Ridge, all of N.J., assignors to Foster D. Snell, Inc., Florham Park, N.J.
Continuation-in-part of Ser. No. 168,499, Aug. 2, 1971. This application June 29, 1973, Ser. No. 374,899
Int. Cl. A22c 18/00, 25/00
U.S. Cl. 426—146 10 Claims

Compounded food products containing a relatively high (at least 18 percent by weight) vegetable protein content and at least 10 percent by weight of an edible polyhydric alcohol are prepared in the form of a doughy mass which is cooked or baked, dried to a moisture content of 4–8 percent, then compressed to 20–80 percent of the original volume and dried to a moisture content of 3 percent or less. Such food products can be stored at ordinary temperature if protected from moisture or under refrigeration for long periods of time. On admixture with aqueous liquids they recover their original volume, geometry and structure.

3,812,269
PROPIONIC ACID COATED SILICA AS A FOOD PRESERVATIVE
Hans-Karl Mueller, Bruchkobel, and Gerd Lumbeck, Wolfgang, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Aug. 7, 1972, Ser. No. 278,648
Claims priority, application Germany, Aug. 10, 1971, 2140009
Int. Cl. A23r 3/00
U.S. Cl. 426—227 3 Claims

A food preservative for use particularly in animal feeds and cereals consists of a pourable pulverulent mixture of two to three parts propionic acid and one part of a finely dispersed, activated synthetically formed silicic acid, silicate or mixture of both.

3,812,270
METHOD OF FEEDING FILLED CONTAINERS TO A RETORT OR THE LIKE
Gerald Hartz, Wheaton, Ill., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 24,089, March 31, 1970, Pat. No. 3,662,676. This application Jan. 14, 1972, Ser. No. 217,802
Int. Cl. A23l 3/04
U.S. Cl. 426—231 9 Claims

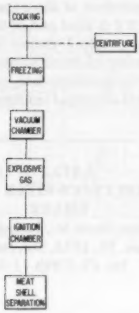


A method of feeding filled containers to a retort or the like. A pocket conveyor is immersed in a suitable liquid, such as water, and has filled containers transferred thereto from an input conveyor. The pocket conveyor is incrementally advanced in synchronism with the advance of filled containers on the input conveyor with the presence of individual containers being detected by a suitable means such as a photocell. The liquid is preferably heated so as to maintain the contents of the containers at or near the temperature at which they have been filled. The liquid is maintained at such a height so as to effect a cushioning of the filled containers as they are transferred from the input conveyor to the pocket conveyor. In addition, the liquid functions to permit a quality control inspection on the containers to be performed in that those containers having too much air therein float in the liquid.

3,812,271
METHOD FOR EXTRACTING MEATS FROM CRUSTACEANS
James M. Lapeyre, 13 Richmond Pl., New Orleans, La.
Filed May 7, 1973, Ser. No. 357,556
Int. Cl. A22c 29/00
U.S. Cl. 426—312 7 Claims

The present disclosure is directed to a method of removing the edible meat from crustacea by cooking or not cooking the crustacea such as a crab to coagulate the protienatious mass and freezing same to prevent injury thereto during shell

removal which first consists of subjecting the crab to a vacuum and breaking the vacuum to permit the sucking into the exoskeletal shell of a mixture of explosive gas and air which is



then ignited causing an explosion of the exoskeletal shell away from the edible meat and the meats and shell fragments are subsequently separated.

3,812,272

PREPARATION OF AN ADDITIVE FOR ALCOHOLIC BEVERAGES

Creath Q. Linville, 3601 N. Fifth Ave., Apt. 110, Phoenix, Ariz.

Filed Sept. 1, 1972, Ser. No. 176,841
Int. Cl. C12g *3/06*
U.S. Cl. 426—380 **2 Claims**

An additive for alcoholic beverages is prepared by blending at room temperature about equal volumes of honey and vinegar, and diluting the blend with water.

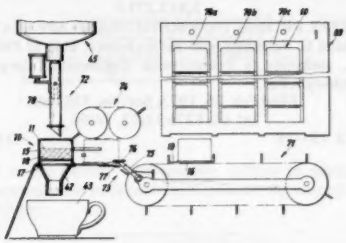
3,812,273

METHOD FOR THE MECHANICAL PREPARATION OF INDIVIDUAL CUPS OF FILTERED COFFEE

Ernst Georg Ferdinand Heinrich Schmidt, Buntentorsteinweg, Germany, assignor to Joh. Jacobs & Company, Breman, Germany

Filed June 9, 1972, Ser. No. 261,455
Claims priority, application Germany, June 11, 1971, 2129070
Int. Cl. A23f *1/08*
U.S. Cl. 426—433 **5 Claims**

The deposit of a suitable coin in a vending machine initiates the delivery of a sealed coffee pack from a revolving magazine, via a chute, to a conveyor table. The pack is advanced by a belt and a sealing sheet removed from the bottom of the pack. The pack is then advanced to a brewing station where a plurality of pointed nozzles are lowered to pierce the pack from above and deliver hot water thereto. The freshly brewed coffee exits the pack through a bottom filter and flows through a funnel into a coffee cup beneath the funnel. The



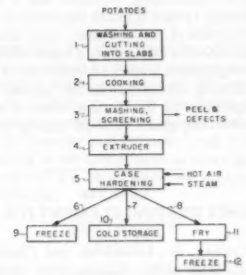
spent pack is then advanced to a disposal chute where it is compacted and dropped into a waste tray.

3,812,274

PROCESS FOR PREPARING SHAPED POTATO PRODUCTS CONTAINING SOLELY FRESHLY COOKED AND MASHED POTATO TISSUE

Merle L. Weaver, Martinez; Earl Hautala, Richmond, and Masahide Nonaka, Moraga, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 23, 1971, Ser. No. 136,926
Int. Cl. A23l *1/12*
U.S. Cl. 426—438 **6 Claims**



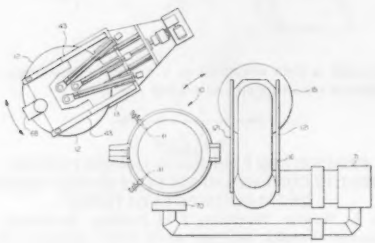
Potatoes are converted into convenience food products, using techniques which provide advantages over customary operations. Example: Potatoes are cooked and mashed. The mash is shaped into strips which are then treated with hot air at about 200° to 300°F. for about 1 to 5 minutes prior to steaming them for about one quarter to 1 minute and again applying hot air at about 200° to 300°F until the weight loss thereof is about 30 to 35 percent to case-harden their surfaces. The resulting intermediates may be fried directly and/or held in frozen or cold storage for future use. On frying, they yield products which have the taste, appearance, color, and texture of high-quality conventional French fries plus added advantages of higher solids content, lower fat content, and no tendency to get limp.

3,812,275

STEEL PRODUCTION METHOD AND APPARATUS

Eberhard G. Schempp, and Jai K. Pearce, both of Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1973, Ser. No. 335,468
Int. Cl. F27b *14/02*, *14/06*
U.S. Cl. 13—10 13 Claims



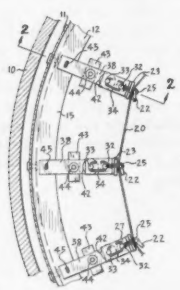
An electric arc furnace pivotable between a first position wherein a gas delivery tuyere system is above the level of a metal charge for preheating the same and a second position wherein the tuyere system is below the level of metal charge to permit the injection of gases, fluxes, ores, alloying additions and other materials for converting a metal charge. A first furnace hood is engageable with the furnace when in its first position for positioning electrodes in the furnace and a second hood is engageable with the furnace when in its second position for withdrawing gases evolved during the gas blowing period.

3,812,276

RESISTANCE HEATING ELEMENT FOR VACUUM FURNACES

Edward N. Cyrway, Jr., Levittown, and Charles J. Schmidt, Philadelphia, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed July 5, 1973, Ser. No. 376,538
Int. Cl. F27d *11/02*; H05b *3/06*
U.S. Cl. 13—25 15 Claims



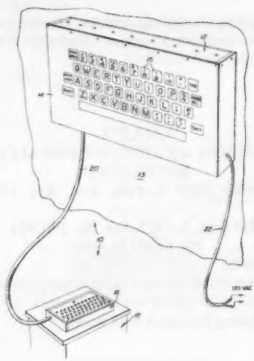
A resistance heating element and an improved mounting therefor for vacuum furnaces is described, the mounting element supports preferably being supported by internal metal heat shields so that the expansion and contraction of the heating element is independent of the expansion and contraction of the vessel in which it is used and of the heat shields therein. The supports are generally T-shaped with a limited internal pivot, with the heating element secured to the support for limited movement to accommodate expansion and contraction, and with internal electrical insulators.

3,812,277

DEMONSTRATION TYPEWRITER KEYBOARD WALL CHART

Bernard A. Swartzman, State St., Lowville, N.Y.

Filed Jan. 30, 1973, Ser. No. 328,004
Int. Cl. G09b *13/02*
U.S. Cl. 35—6 6 Claims



A demonstration typewriter keyboard wall chart system having a display of visible indicia representing keys of a typewriter keyboard, and lamps associated with the keys for selectively illuminating same. The lamps are actuated by switches operatively connected to the lamps. These switches are push-button switches in which the actuating stem has been provided with a hole. The shank of a tack having a substantially planar head is inserted in the stem hole to simulate a keyboard key. A plurality of circuits each including a lamp and switch are connected to the output of a step-down transformer so that low-voltage elements may be employed.

3,812,278

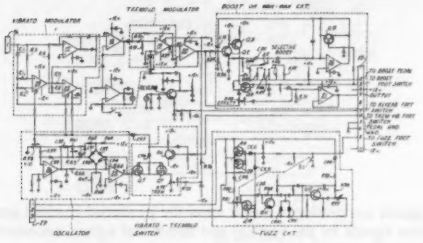
SPECIAL EFFECT AMPLIFIER FOR ELECTRICAL MUSICAL INSTRUMENTS

John L. Aker, Chanute, Kans., assignor to Kustom Electronics, Inc., West Chestnut Chanute, Kans.

Filed Feb. 1, 1972, Ser. No. 222,524
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 8 Claims

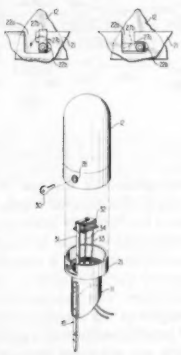
A special feature or effect portion of an amplifier for musical instruments has circuitry combinations for generating vibrato, tremolo, fuzz and wah-wah or selective boost. The subject amplifier includes circuitry which permits independent selection of vibrato or tremolo and a combination of the

two on an independent basis. Additional circuitry uniquely affects the oscillator therein, switching, vibrato and tremolo



modulation, boost or wah-wah production and the fuzz producing means.

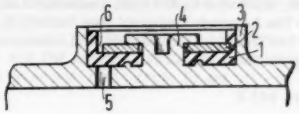
3,812,279
CABLE TELEVISION HOUSING WITH LOCKABLY JOINED COVER AND BASE
Henry Carl Voegeli, 918 Gibbs Rd., Venice, Fla.
Filed Feb. 12, 1973, Ser. No. 331,900
Int. Cl. H02g *3/14, 9/00;* **B65d** *55/14*
U.S. Cl. 174—38 **7 Claims**



A two part housing comprised of a base adapted to be inserted into the ground and having means supported thereon adapted to be connected to conduit means positioned in the ground and a cover lockably joined to the base for encasing and protecting the connecting means against unauthorized use.

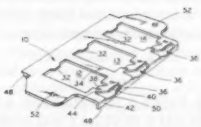
3,812,280
ELECTRICAL CAPACITORS WITH VENTED CLOSURES
Andreas Deckert, Heidenheim, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Apr. 24, 1973, Ser. No. 354,006
Claims priority, application Germany, Apr. 27, 1972, 2220752
Int. Cl. H01g *9/12*
U.S. Cl. 174—52 S **9 Claims**

An electrical capacitor having a sealed housing and a number of pressure relief orifices formed in the housing. A resilient annular valve disc overlies the orifices and a rigid washer like member holds the resilient disc in place against the housing. The rigid member has a number of recesses



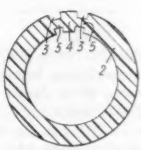
located in the vicinity of respective orifices to permit the resilient member to be lifted to vent pressure developed inside the capacitor.

3,812,281
LOCKING ASSEMBLY
Fred S. Boyer, 5638 N. Kostner, Chicago, Ill.
Filed May 21, 1973, Ser. No. 362,197
Int. Cl. H02b *1/10*
U.S. Cl. 174—53 **15 Claims**



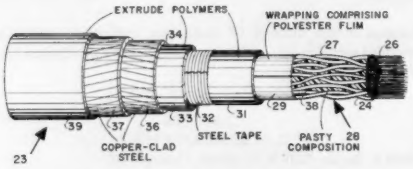
Locking assemblies for the mounting of electrical components or other members to a plate member include at least one locking member positioned adjacent the edge of an aperture in the plate member in which the component is to be mounted. The locking member is hingedly connected to the plate member for rotation and includes a tab which is rotatable into an opening in the component or other member which is to be mounted on the plate when the locking member is rotated about its hinge.

3,812,282
TEARABLE INSULATION SHEATH FOR CABLES
Johan A. E. Johansson, Grimsas, Sweden, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Jan. 11, 1973, Ser. No. 322,661
Int. Cl. H01b *7/00;* **H02g** *1/12*
U.S. Cl. 174—68 C **4 Claims**



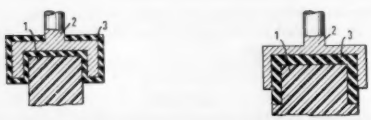
A cable sheath includes a pair of parallel longitudinal depressions and a rim therebetween to provide a simplified accessible cutting web for manually splitting open the cable. The depressions can be on the inner or outer surfaces or both and the rim may include a wire thread and a raised outer surface to facilitate the tearing.

3,812,283
PRESSURE RESISTANT CABLE
Erich W. Kothe, White Plaines; Lawreace C. Ebel, Hastings-on-Hudson, and Ralph C. D'Ascoli, Yonkers, all of N.Y., assignors to The Anaconde Company, New York, N.Y.
Division of Ser. No. 116,845, Feb. 19, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,318
Int. Cl. H01b *11/06*
U.S. Cl. 174—105 R 2 Claims



A land lines communication cable system resistant to shock pressures comprises an integral tensile unit wherein tensile tapes covering the cable lengths are secured to splice cases, and an integral compressive unit wherein a plurality of both cable lengths and splice boxes are filled with an intercommunicating incompressible pasty composition.

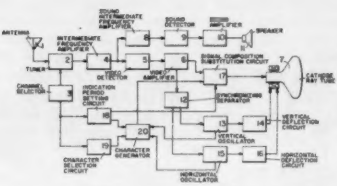
3,812,284
ELECTRICAL INSULATOR HAVING ADDITIONAL PROTECTIVE INSULATING PORTION
Dieter Pohl, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 24, 1972, Ser. No. 283,407
Claims priority, application Germany, Aug. 30, 1971, 2143365
Int. Cl. H01b *17/32, 17/42*
U.S. Cl. 174—188 2 Claims



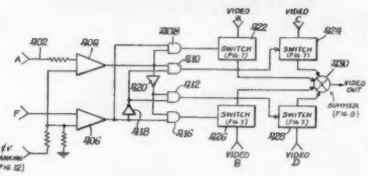
An electrical insulator having an insulating portion, to which an electrode is applied, whose resistance to leakage currents is greater than the leakage current resistance of the remaining portion of the insulator to prevent the formation of an electrical discharge between the electrode and the remaining portion of the insulator.

3,812,285
TELEVISION CHANNEL INDICATOR
Etsutaro Miyata, Yamatokoriyama; Setsufumi Kamuro, Tenri, and Kenji Sano, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 2, 1973, Ser. No. 337,704
Claims priority, application Japan, Mar. 3, 1972, 47-22467
Int. Cl. H04n *5/60*
U.S. Cl. 178—5.8 16 Claims

In the television receiver implementations the transmitted video signals are received and then reproduced to form pictures in a cathode ray tube in accordance with the video signals. The previously produced channel character signals indicative of the selected channel numbers are used as substitutes for the video signals to enable channel indication in the same cathode ray tube. In order to accomplish the channel indication, the channel position signals are first produced in a channel selector mechanism and then the channel character signals are produced based upon the produced channel position signals by the vertical and horizontal signals necessarily formed on the receiver circuit arrangement.



3,812,286
ROTARY SPECIAL EFFECTS GENERATOR
Nikola B. Tkacenko, Auburn, Calif., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.
Filed Apr. 5, 1971, Ser. No. 131,300
Int. Cl. H04m *5/22*
U.S. Cl. 178—6.8 23 Claims

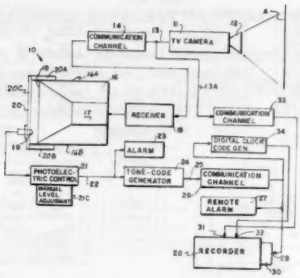


A special effects generator for use in video switching produces a wide variety of rotational wipes, fades, and special effects. The generator functions by mixing together controlled amounts of horizontal and vertical sawtooth waveforms and DC potentials. The resultant signal is then fed into a comparator, and the comparator output is used to control one or more electronic video switches. The special effects are controlled by varying the strengths of the waveforms which are summed through the use of potentiometers or variable resistors. Rotational special effects are achieved through the use of a 360 degree circular potentiometer having multiple taps. Provision is made for multiple image special effects. Also disclosed are circuits for preserving the integrity of the switch output signal during synchronizing intervals and for equalizing the DC levels of all the video signals which are mixed together.

3,812,287
VIDEO DETECTION SYSTEM
Jermone H. Lemelson, 85 Rector St., Metuchen, N.J.
Continuation-in-part of Ser. No. 823,600, May 12, 1969, Pat. No. 3,705,953, which is a continuation-in-part of Ser. No. 723,075, Feb. 28, 1958, Pat. No. 3,084,213. This application Oct. 24, 1972, Ser. No. 300,249
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 3 Claims

An apparatus and method are provided for automatically detecting a change in an image field such as the appearance of an object in said field or the disappearance of said object. The apparatus which employs a television camera scanning the image field and which generates a video picture signal which is

applied to a remote cathode ray tube to provide an image of the field on the screen thereof, may be employed for security



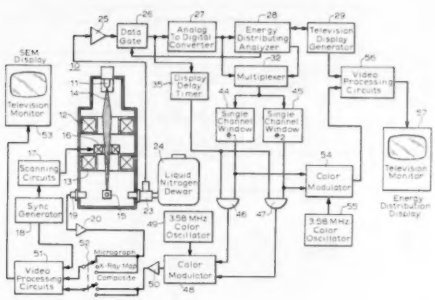
purposes to automatically detect images in the image field. An alarm is sounded when one or more particular portions of the image field vary in content.

3,812,288

TELEVISION DISPLAY SYSTEM

Charles J. Walsh, Deerfield, and Morris W. Barnhart, Buffalo Grove, both of Ill., assignors to Edax International Inc., Prairie View, Ill.

Filed Nov. 21, 1972, Ser. No. 308,522
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 **11 Claims**



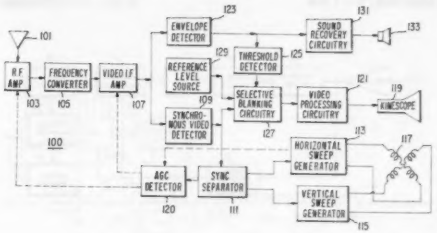
A television display system for a scanning electron microscope provides a spatially correlated area map display of X-ray events emitted from a specimen within one or more predetermined energy ranges as the specimen is scanned at standard television scanning rates by an electron beam. The X-ray area map display can be presented alone, or in combination with a conventional micrograph magnified image of the specimen. Provision is made for displaying X-ray events falling within different energy ranges in different colors on the area map television display to facilitate determining the distribution of selected elements within the specimen, and for color coding the distribution peaks on an associated X-ray energy distribution television display to facilitate correlation with the elements displayed in the area map display.

3,812,289

TELEVISION RECEIVER USING SYNCHRONOUS VIDEO DETECTION

Jack Avins, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,797
Int. Cl. H04n 5/44
U.S. Cl. 178—7.3 R **8 Claims**



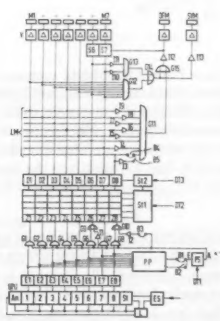
Synchronous video detection in a television receiver provides increased detection linearity and better signal-to-noise ratio for weak signals than does envelope video detection. Impulse noise, which produces generally unobtrusive black-going noise in a kinescope picture produced in accordance with a video signal recovered by envelope detection, conventionally produces obtrusive white-going noise as well in a picture produced in accordance with a video signal recovered by synchronous detection. Impulse noise detected by an auxiliary video detector responsive to the video i-f envelope provides a blanking signal to remove obtrusive white noise from the output signal of a synchronbus video detector.

3,812,290

SYSTEM FOR INDICATING PARITY-DISTURBING INTERFERENCES IN TRANSMISSIONS FOR TELEPRINTERS

Roman Lutz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 8, 1971, Ser. No. 187,607
Claims priority, application Germany, Nov. 16, 1970, 2056278
Int. Cl. H04l 1/10
U.S. Cl. 178—23 A **2 Claims**



A system for indicating parity-disturbing interferences in transmissions for teleprinters wherein the teleprinters print a special symbol to indicate such interferences including an electronic receiving circuit having electronic means for recoding received symbols which result in a non-parity condition during conversion, recoding providing a predetermined code

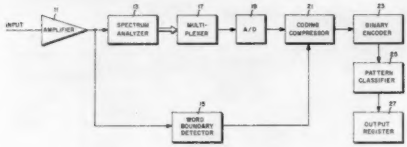
combination for conversion by a printer into a special symbol, either a smear symbol or a space.

3,812,291

SIGNAL PATTERN ENCODER AND CLASSIFIER

Donald L. Brodes, Fairfax, and Myron H. Hitchcock, Reston, both of Va., assignors to Scope Incorporated, Reston, Va.

Filed June 19, 1972, Ser. No. 263,849
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SA **13 Claims**



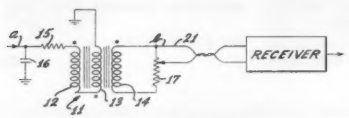
A device for encoding and classifying signal data obtained from a multiplicity of property filters. A fixed length binary pattern is produced for each signal input. This binary pattern provides the input to a pattern classifier which is organized for a particular classification task by an estimation process that combines a multiplicity of binary patterns into a standard reference pattern. Classification is accomplished by comparing binary encoded patterns generated by signal occurrences with previously generated reference patterns.

3,812,292

DIGITAL COMMUNICATION SYSTEM

Robert MacMillan Tink, San Diego, Calif., and Bob Jim Baker, Walton, W. Va., assignors to The National Cash Register Company, Dayton, Ohio

Continuation of Ser. No. 225,793, Feb. 14, 1972. This application July 16, 1973, Ser. No. 379,275
Int. Cl. H04b *3/50*
U.S. Cl. 179—2 DP **4 Claims**



A short distance binary telephone communications system employing a transformer having a square hysteresis loop core as a transmitter. The binary signal is differentiated by the transformer and applied to a short conventional telephone line. The receiver employs an impedance matching transformer to drive a flip-flop to reproduce the input binary signal.

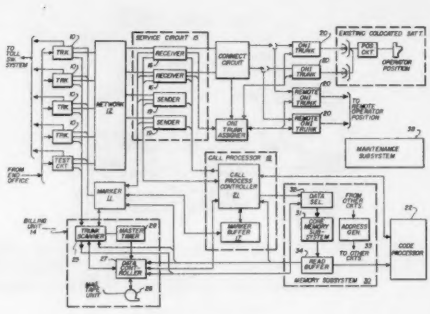
3,812,293

ARRANGEMENT FOR PROVIDING PRIORITY OVERRIDE OF BILLING BUFFER ENTRY SELECTOR

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 2, 1973, Ser. No. 320,371
Int. Cl. H04m *15/10*
U.S. Cl. 179—7 R **7 Claims**

A permanent record of billing information is produced from trunk scanner entries and initial entries from a call processor, with the trunk scanner and the call processor being alternately provided access to the billing buffer. The trunk scanner has only a single queue providing access to the billing buffer and if this queue is full when another entry is attempted, trunk scanner congestion can occur. The arrangement of the present invention, should congestion occur, provides priority override for the trunk scanner entries over the initial entries, until the queue is empty.

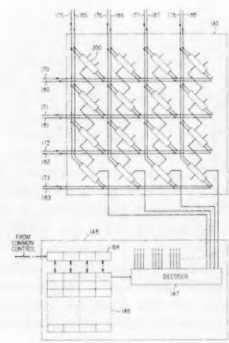


3,812,294

BILATERAL TIME DIVISION MULTIPLEX SWITCHING SYSTEM

Thomas Josef Pedersen, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 22, 1972, Ser. No. 317,657
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 AQ **17 Claims**



A switching network comprising arrays of bilateral crosspoint stores is combined with a plurality of bilateral time slot interchangers connected in links between switching stages to form a complete switching system. The two connections required for a two-way communication are established through bilateral crosspoint stores and a bilateral time slot interchanger which are common to both connections, thereby eliminating hardware redundancy. The system is controlled by information stored in local control memories and associated auxiliary control memories. Call setup and release is implemented by means of pulse stuffing and pulse absorbing at registers in the crosspoint stores and time slot interchangers, and

proceeds at all stages simultaneously instead of by propagating stage-by-stage through the network.

3,812,295

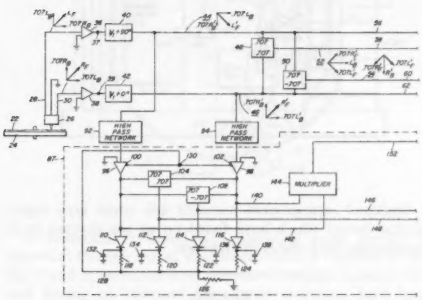
QUADRAPHONIC REPRODUCING SYSTEM WITH GAIN RIDING LOGIC

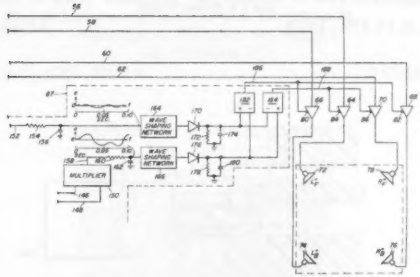
Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 81,858, Oct. 19, 1970, abandoned. This application May 8, 1972, Ser. No. 251,636

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **14 Claims**





Apparatus for reproducing four separate channels of information on a medium having only two independent tracks and presenting it on four loudspeakers to give a listener the illusion of sound coming from a corresponding number of separate sources. The realism of the illusion is enhanced by a decoding system which accepts the two outputs from the medium, which may be a disc record, one from each track, separates them into four independent channels each carrying predominantly the information contained in the originally recorded sound channels, and, utilizing cross-correlation techniques, derives a pair of control signals for controlling the gains of amplifiers associated with the four loudspeakers. The use of cross-correlation improves the separation of the four independent channels, particularly the generally "front" from the generally "back" signals, thereby to enhance the realism of four-channel simulation.

3,812,296

APPARATUS FOR GENERATING AND TRANSMITTING DIGITAL INFORMATION

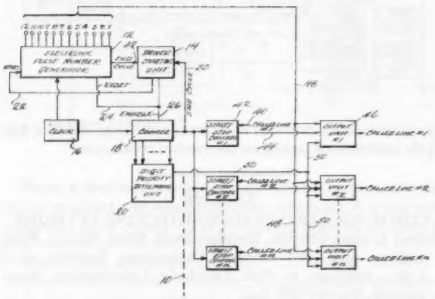
Theodore G. Paraskevakos, Athens, Greece, assignor to Paraskevakos Electronics & Communication, Inc., Wilmington, Del.

Continuation of Ser. No. 76,436, Sept. 29, 1970, abandoned. This application June 7, 1972, Ser. No. 260,511

Claims priority, application Greece, Jan. 26, 1970, 39092

Int. Cl. H04m *3/42*

U.S. Cl. 179—18 B **20 Claims**



An apparatus for serially generating groups of electrical pulses, each group representing the value of a particular digit or ordinal place of a predetermined number such as the number of a calling telephone together with control digits and added information carrying digits for display or recording at a called telephone site. A number pulse generator repetitively and simultaneously produces a plurality of output pulse trains, each train representing one possible value of a digit. A priority determining unit also generates ordinal place signals sequentially representing a time for transmitting each sequential digit of the predetermined number and selected ones of the groups of electrical pulses are sequentially gated by the ordinal place signals to result in the desired serial transmission of groups of pulses respectively representing the predetermined number whenever such transmission is desired such as in response to a busy signal from the called telephone.

3,812,297

BUS CONTROL ARRANGEMENT FOR A COMMUNICATION SWITCHING SYSTEM

Robert A. Borbas, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

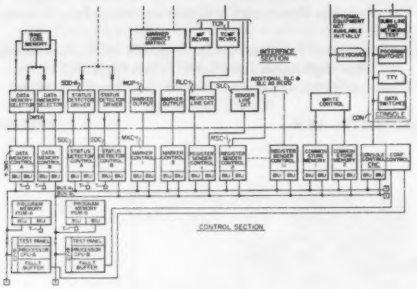
Filed Oct. 6, 1972, Ser. No. 295,630

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **29 Claims**

The system has duplicate central processors, each having its own bus. Subsystem modules include program memory, data base memory, status detector, register-senders, markers, etc., each having one or more memory word stores. Bus interface units of identical construction are interposed between the subsystem modules and the busses. Some modules such as program memory are duplicated and each connected to one bus, while others are connected via their interface unit to both buses. All memory addresses are accessed from a processor via its bus, each address being effective to select only one interface unit, and the complete address being then passed to the subsystem module to read or write a data word. The bus

comprises control conductors, and data conductors for both address and data in either direction. A bus control unit at the



central processor provides an address cycle followed by a data cycle indicated by signals on the control conductors.

3,812,298

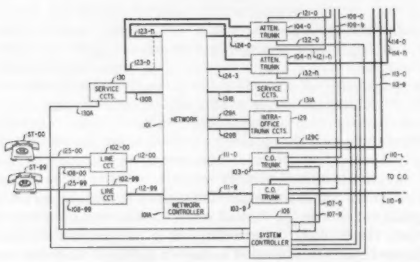
COMMUNICATION SYSTEM SWITCHING NETWORK

Robert George Dittrich, Boulder; Dean Brian Secord, Westminster, and Louis Emanuel Thelemaque, Boulder, all of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1972, Ser. No. 295,671

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 EA **11 Claims**



A switching system is disclosed having a network controller which, in response to the receipt of a request for a network connection, simultaneously tests for the availability of an idle circuit of the type to which a connection is requested as well as the availability of idle paths through the network to the requested circuits.

3,812,299

ARRANGEMENT FOR PROTECTING A COMMON HIGHWAY IN A COMMON CONTROL COMMUNICATION SWITCHING SYSTEM

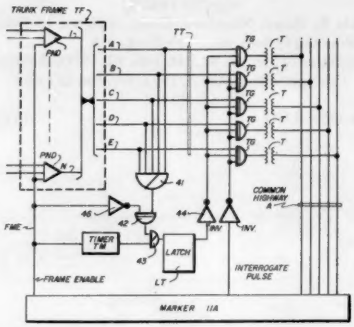
Gerald H. Fleischfresser, Chicago, and Truman R. Mila, Lombard, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 28, 1973, Ser. No. 345,627

Int. Cl. H04m *3/08*

U.S. Cl. 179—18 AH **8 Claims**

An arrangement is provided for protecting a common highway in a common control communication switching system of the type having full redundancy of the common control equipment, but not the trunks. In the particularly disclosed system, a truck type signal generator means is associated with each trunk and gates the truck type information onto both of the common highways servicing the "on-line" and "off-line" markers so that both markers can see the information and respond alike to maintain synchronous operation.



The disclosed arrangement prevents any trunk type signal generator means which have failed on or are shorted from contaminating both common highways.

3,812,300

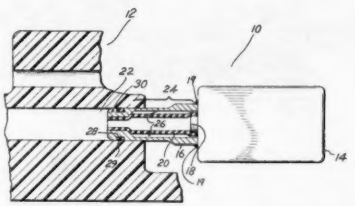
IMPROVED RECEIVER ASSEMBLY INCORPORATING ACOUSTICAL ENCLOSURE FOR RECEIVER

Richard Brander, Chicago, and Erwin M. Weiss, Cicero, both of Ill., assignors to Beltone Electronics Corporation, Chicago, Ill.

Continuation of Ser. No. 94,321, Dec. 2, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,976

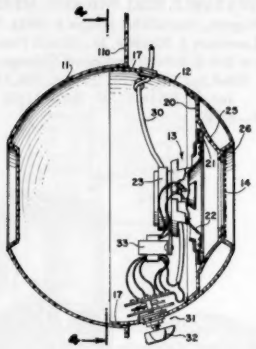
Int. Cl. H04r *25/00*

U.S. Cl. 179—107 R **5 Claims**



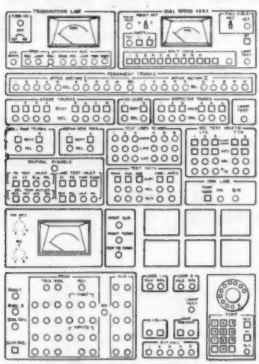
An improved receiver assembly includes a hollow metal casing for the receiver having a number of compliant members supporting the receiver from the inner surface of the casing. The compliant support members reduce the transmission of mechanical vibration and protect the receiver from external mechanical shock. The improved assembly includes a flexible tube for conducting sound from the receiver to an acoustical load and a metallic nozzle connected to the receiver casing and covering the flexible tube. An annular recess is defined on one end of the nozzle for receiving a ring seal which provides an efficient connection to the acoustical load. Flexible wires conduct an electrical signal to the receiver. The receiver casing and nozzle provide an acoustically sealed hollow enclosure around the receiver which prevents unwanted leakage of acoustic energy.

3,812,301
SPHERICAL LOUDSPEAKER
Uolevi L. Lahti, 909 Sunset Rd., Ann Arbor, Mich.
Filed Mar. 6, 1973, Ser. No. 338,530
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B 2 Claims



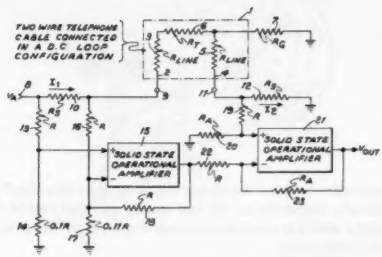
A loudspeaker including a radiating cone speaker in a spherical flexible sealed enclosure which is capable of radiating sound in response to variations of internal acoustic waves, and having an inverted impedance matching horn located between the radiating cone and the external environment and radiating via an opening in the enclosure.

3,812,302
TEST DESK INCLUDING A MANUALLY CONTROLLED CONNECT MATRIX
Kurt F. Herr, Woodridge, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Apr. 6, 1973, Ser. No. 348,561
Int. Cl. H04m *3/26*
U.S. Cl. 179—175.2 R 9 Claims



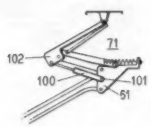
A test desk is equipped with pushbutton controls and a manually controlled connect matrix for establishing connections between any one of a number of test circuits and any one of a number of test trunks. Provisions are included for preventing double or multiple connections, as well as for tracing connections.

3,812,303
DIFFERENTIAL LOOP CURRENT DETECTOR
Edward F. Stewart, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Oct. 11, 1972, Ser. No. 296,727
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R 13 Claims


TWO WIRE TELEPHONE CABLE CONNECTED IN A D.C. LOOP CONFIGURATION
SOLID STATE OPERATIONAL AMPLIFIER
SOLID STATE OPERATIONAL AMPLIFIER
VOUT

There is disclosed a solid state differential loop current detector to detect and measure current unbalance in a two wire telephone cable connected in a direct current loop configuration wherein the current unbalance is due to paths to ground potential from the telephone cable. The detector includes a first solid state operational amplifier appropriately connected to an input terminal supplying a voltage to the adjacent end of one wire of the telephone cable and to the adjacent end of the one wire of the telephone cable and a second solid state operational amplifier appropriately connected to the output of the first amplifier and to the adjacent end of the other wire of the telephone cable. The second amplifier produces an output voltage having an amplitude proportional to the magnitude of the current unbalance.

3,812,304
HIGH SPEED CURRENT COLLECTION
Roland Leger, Paris, France, assignor to Faiveley S.A., Saint Ouen, France
Filed Mar. 22, 1972, Ser. No. 236,874
Int. Cl. B60l *5/12*
U.S. Cl. 191—66 4 Claims

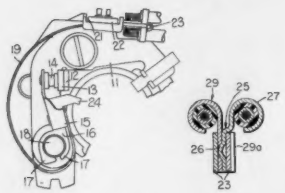


The coupling between a high speed electrically powered vehicle and an overhead catenary wire current distribution system is enhanced by providing compensation separately for low amplitude dynamic displacements of a wire contacting current collector which occur at different frequencies.

3,812,305
TERMINAL CONNECTOR ASSEMBLY FOR AUTOMOTIVE DISTRIBUTOR CONTACT BREAKER
Alfred Rees, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Filed Jan. 15, 1973, Ser. No. 323,384
Claims priority, application Great Britain, Jan. 15, 1972, 2025/72
Int. Cl. H01h *1/58*
U.S. Cl. 200—284 7 Claims

A contact breaker assembly including a fixed contact a movable contact and a conductive leaf spring electrically con-

nected to the movable contact and urging the movable contact towards the fixed contact. At its end remote from the movable contact the leaf spring is bent back on itself to define a spring clip having a pair of limbs. A terminal member is engageable



between the limbs of the spring clip so as to be electrically and physically connected to the leaf spring, and that region of the terminal which is received between the limbs of the spring clip bears a projection.

3,812,306

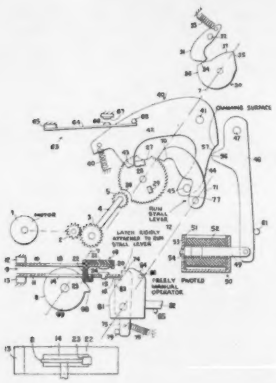
SWITCHING MECHANISM

John L. Harris, Clearwater, Fla., assignor to Deltrol Corp., Bellwood, Ill.

Division of Ser. No. 133,077, April 12, 1971, Pat. No. 3,716,720. This application Aug. 23, 1972, Ser. No. 283,109

Int. Cl. H01h *43/10*

U.S. Cl. 200—39 R **10 Claims**



Protection against refrigeration compressor burnout by short cycling is provided by a time delay switching mechanism having a motor and a solenoid controlled by a room thermostat. The motor runs continuously and the solenoid stops and starts the timer by stalling or releasing the timer gear. The timer gear has teeth omitted at the stalling points to allow the motor to run free. A starter cam follower bearing on a starter cam serves to start the timer gear when released by the solenoid. The solenoid operates the stalling and switch control mechanism through a compound leverage and camming system compensating for the non-linear pull curve of the solenoid. The device also includes a combination cam and latch operated switch in which one switch blade carries a follower lifting another blade which is then held by the latch when the follower drops to close the switch. A manual operator is provided for closing the switch independently of the timing mechanism. This manual operator is released automatically by the solenoid dropping out when the thermostat becomes satisfied. The timer also includes an arrangement for locking the compressor switch closed for a period of time when it first closes to allow the system to settle down and thus avoid short cycling.

3,812,307

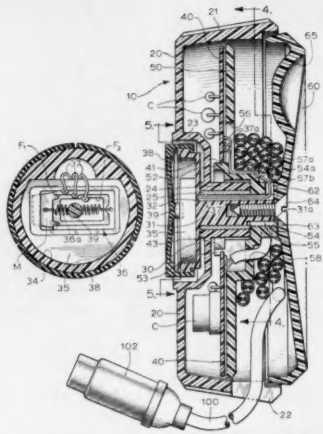
RETRACTABLE CORD ASSEMBLY WITH ELECTRIC SWITCH INTEGRALLY ASSOCIATED WITH ROTATABLE REEL HOUSING MEMBER

Everett F. Wagner, Northfield; Joseph J. Sidlo, North Barrington, and Lawrence J. Rischke, Jr., Mount Prospect, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 24, 1973, Ser. No. 326,322

Int. Cl. H01h *35/00*; **H02g** *11/00*

U.S. Cl. 200—52 R **7 Claims**



A control system for remotely controlling electrical devices from a plurality of locations. The system includes a stationary housing member, and electrical switching and circuit means joined for rotating in unison. The terminal end of a power cord is connected with said circuit means and is rotatable therewith. The simultaneous rotation of said switch and circuit means readily maintains the electrical continuity of the system.

3,812,308

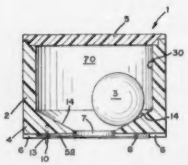
BALL ACTUATED INERTIA SWITCH

Lon E. Bell, and William B. Gruber, both of Altadena, Calif., assignors to Technar, Incorporated, Pasadena, Calif.

Filed Aug. 23, 1972, Ser. No. 283,243

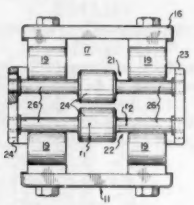
Int. Cl. H01h *35/14*, *1/16*

U.S. Cl. 200—61.45 R **3 Claims**



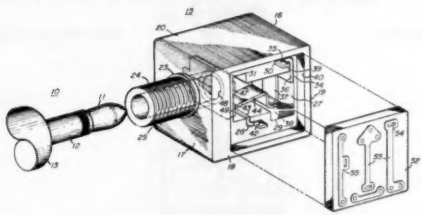
Inertia switch with mass freely movable in chamber and energizing switch means upon reception in chamber.

3,812,309
ELECTRICAL SWITCH WITH HIGH PRESSURE CONTACTS
Cary J. Ahrano, McDonough, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.
Filed Nov. 6, 1972, Ser. No. 304,340
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 A **11 Claims**



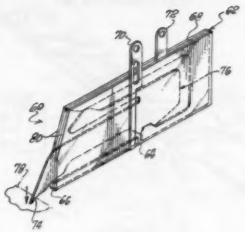
A stationary jaw contact assembly for use in high current disconnect switches including opposed fixed contact members, each fixed contact member associated with a variable diameter cylindrical contact member rotatably mounted between the fixed contacts. Each rotatable contact member has a reduced diameter portion which engages the associated fixed contact member and an enlarged diameter portion. The enlarged diameter portions on each rotatable contact define a space between themselves receivable of a movable blade contact during closing of the switch so that the blade contact simultaneously engages each enlarged diameter portion. The size of the force required to make or break electrical contact is proportional to the ratio of the radius of the small diameter portion to the radius of the enlarged diameter portion.

3,812,310
SEALED PRINTED CIRCUIT JACK PLUG CONNECTOR
Bernard Gasparaitis, Fort Lauderdale, and Dennis J. Maloney, Margate, both of Fla., assignors to Motorola, Inc., Chicago, Ill.
Filed June 11, 1973, Ser. No. 368,804
Int. Cl. H04r *13/70*
U.S. Cl. 200—51 R **11 Claims**



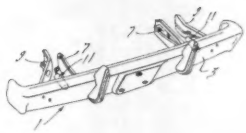
A jack plug connector having a four sided hollow non-conductive housing with plug contacts mounted therein for contacting the jack plug. The contacts have tabs thereon which fit into apertures in printed circuit boards which are secured to each side of the housing and form the top and bottom walls of the housing. Components and conductors are secured in the apertures of the printed circuit board and all the apertures are sealed as by soldering.

3,812,311
MINIATURE TYPE SWITCH PROBE FOR TESTING INTEGRATED CIRCUIT ASSEMBLIES OR THE LIKE
Joseph Kvaternik, Belmont, Calif., assignor to Electronic Memories & Magnetics, Inc., Los Angeles, Calif.
Filed Dec. 11, 1972, Ser. No. 313,646
Int. Cl. H01h *3/00*; **G01r** *31/22*
U.S. Cl. 200—61.42 **18 Claims**



Apparatus for contacting the miniature terminal pads of an integrated circuit, including a frame having a pair of thin glass sheets held a small distance apart by a thin spacer that extends along most of the periphery of the sheets, and a blade of thin conductive sheet material located between the sheets. The blade has a rear end with a recess that receives a bump formed on the spacer for pivotally mounting the blade on the spacer, and the blade also has a thin spring arm that bears against the spacer to urge the blade into firm pivotal engagement with the spacer bump and to bias the blade towards one direction of pivoting.

3,812,312
IMPACT VELOCITY SENSOR SWITCH WITH LINEARLY MOVABLE CONTROLLER
Poul H. Andersen, Royal Oak; Frank R. Povilaitus, and Robert S. Himes, both of Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 198,541, Nov. 15, 1971, Pat. No. 3,753,475. This application Apr. 9, 1973, Ser. No. 349,501
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.53 **6 Claims**

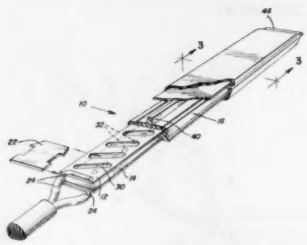


Sensing device for sensing the velocity of an automotive vehicle when the latter collides with another object, the device having a plurality of contacts adapted to be electrically interconnected at different times depending upon the velocity of the vehicle at the moment of impact.

3,812,313
TREAD TYPE SWITCH FOR USE IN PASSENGER SEATS OR THE LIKE
Walter A. Wolf; Prentice R. Corn, and Wallace A. Gebhardt, all of Logansport, Ind., assignors to Switches, Incorporated, Logansport, Ind.
Filed Feb. 20, 1973, Ser. No. 334,019
Int. Cl. H01h *3/02*
U.S. Cl. 200—86 R **18 Claims**

This invention relates to an electrical switch that includes a pair of resilient metal contact strips mounted in parallel

spaced relationship in a hollow resilient casing. One of the contact strips has a plurality of diagonally positioned slits therein that are located between opposite lateral edges while the other strip has a plurality of longitudinally spaced protrusions extending towards the adjacent strip.



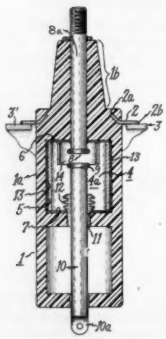
The casing is mounted within an outer cover and the casing has an elongated bead or projection aligned with the protrusions while a thin sheet metal strap is positioned between the projection and the casing to concentrate the pressure applied to the adjacent surface of the casing to a localized area aligned with the protrusions.

3,812,314

HIGH POWER ELECTRICAL BUSHING HAVING A VACUUM SWITCH ENCAPSULATED THEREIN

Gordon C. Nonken, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 23, 1971, Ser. No. 173,871
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **9 Claims**



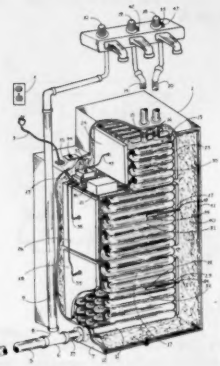
A molded plastic bushing for high electrical power applications is provided with an encapsulated vacuum switch which is operable to interrupt current in the circuit through the bushing. The combination bushing and vacuum switch are characterized by having an end-to-end withstand voltage rating that is at least twice as great as the withstand voltage rating of the switch in an unencapsulated state. The bushing-switch combination is further characterized by affording an ideal handling and support mechanism for the vacuum switch container, so that large contact-closing pressures can be employed to actuate the switch, without danger of damage to the switch or its encapsulation.

3,812,315

MICRO-WAVE HEATER

Norman Eugene Martin, 3529 Van Buren, ElPaso, Tex.

Filed Feb. 27, 1973, Ser. No. 336,220
Int. Cl. H05b *9/06, 9/04, 5/00*
U.S. Cl. 219—10.55 **6 Claims**



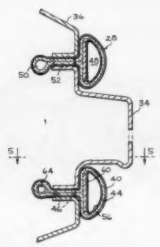
A fluid, such as water, is heated on demand and supplied either hot or boiling by the device of the present invention which comprises, generally, a coiled tubular reservoir which is heated in different areas by a plurality of sequentially arranged pairs of dielectric plates. Micro-wave energy is supplied to the respective pairs of dielectric plates selectively by means of electrical switching mechanisms and thermostatic controls so that either hot or boiling water is quickly available and a continuous flow is maintained as required.

3,812,316

DOOR SEAL GASKET FOR COMBINED MICROWAVE AND SELF-CLEANING OVEN

Frank L. Milburn, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 28, 1973, Ser. No. 345,716
Int. Cl. H05b *9/06*
U.S. Cl. 213—10.55 **5 Claims**



An electrically conductive, heat resistant gasket is provided for sealing the door in an oven of the combination pyrolytic self-cleaning and microwave type. The gasket has a knitted stainless steel outer jacket for making electrical contact between the oven door and the oven body and further to make a seal to prevent the escape of microwave radiation from the oven cavity. A woven glass fiber sleeve comprising a pair of coextensive chambers is disposed coextensively within the outer jacket for sealing the oven against the escape of heat, smoke and gases, especially those generated in the self-cleaning process. Arranged coextensively within one chamber of

the sleeve is a flat, metal insert and a resilient core, the combination serving to prevent gathering of the gasket as it is bent around the corners of the oven door and to insure a controlled width and uniform sealing around the entire periphery of the cavity opening. Gasket mounting means in the form of a glass fiber bead draw-string is arranged coextensively within a second chamber of the sleeve for aiding in sub-assembling the gasket on the door inner panel.

3,812,317

SPARK EROSION DEVICE HAVING ARC DETECTING MEANS

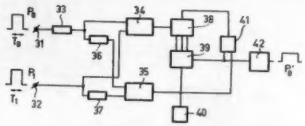
Paulus Maria De Bont, Emmasingel, Eindhoven, and Willem Van Liefland, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,647

Claims priority, application Netherlands, Dec. 8, 1971, 7116823

Int. Cl. B23k 9/16

U.S. Cl. 219—69 P **12 Claims**



Described is an apparatus for the timely detection of arcs during a spark erosion process. The breakdown delay time upon each discharge is compared to a reference time interval. In the event of a number of successive discharges with breakdown delay times shorter than this time interval, an error signal is produced.

3,812,318

APPARATUS FOR WELDING, FUSING OR HEATING WORKPIECE UTILIZING ENERGY OF A LIGHT BEAM

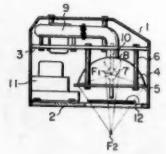
Shuzo Yoshizumi, Takarazuka, and Yoshimitsu Matsumoto, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Nov. 24, 1972, Ser. No. 309,000

Claims priority, application Japan, Nov. 26, 1971, 46-95472; Dec. 9, 1971, 46-99980; Dec. 11, 1971, 46-100350; Dec. 11, 1971, 46-100351; Dec. 17, 1971, 46-103060

Int. Cl. B23k 1/04

U.S. Cl. 219—85 **5 Claims**



An apparatus for welding, fusing or heating a workpiece utilizing the energy of a light beam comprising an eliptical mirror, a light source of high-temperature are disposed at a first focus of the elliptical mirror and means for holding the workpiece at a second focus of the elliptical mirror. In the apparatus, cooling means is disposed adjacent to the elliptical mirror for cooling the light source.

3,812,319

AUTOMATIC CONTROL OF THE DUTY CYCLE OF AN ELECTRON BEAM HEATING DEVICE

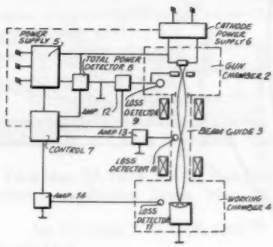
Igor Pavlovich Brukovsky, Mosfilmovsky pereulok, 5 korpus 2 "b", kv 16, Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 831,903, June 10, 1969. This application May 24, 1972, Ser. No. 256,489

Claims priority, application U.S.S.R., June 10, 1968, 1247754

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB **2 Claims**



The automatic control of the duty cycle of an electron beam heating device which controls the heating of an article includes the simultaneous measurement of the total power consumed by the electron beam heating device from its power source and the amount of energy loss in the electron gun, beam guide system and working chamber of the device. The sensed total power and energy loss are compared to determine the power consumed for the heating of an article, this power being employed as a parameter for controlling the duty cycle of the device.

3,812,320

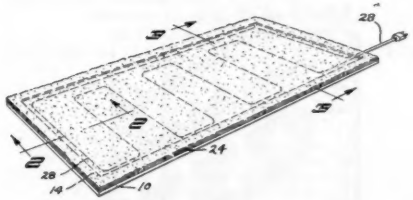
HEATED GROUND COVER FOR THE DISSIPATION OF MOISTURE

Peter M. Borgren, Duluth, Minn., assignor to Boonie Pad Co., Inc., Duluth, Minn.

Division of Ser. No. 106,198, Jan. 13, 1971, abandoned. This application June 30, 1972, Ser. No. 267,892

Int. Cl. H05b 3/16

U.S. Cl. 219—213 **3 Claims**

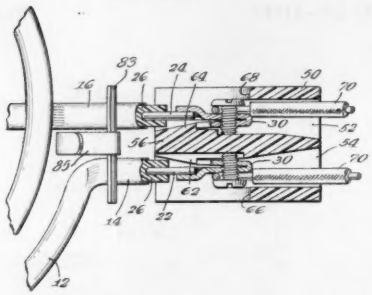


A heated ground cover including a first outer sheet member, a second outer sheet member, heating wires interposed between the outer sheet members with chambers adjacent to the heating wires together with means supporting the outer members whereby heat issuing from the heating wires is distributed throughout the cover to cause evaporation of moisture collected upon the uppermost of the outer sheet member.

3,812,321
ELECTRIC SURFACE TYPE HEATING ELEMENT AND INSULATOR COMBINATION

Charles A. Skinner, Laurel, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Aug. 16, 1973, Ser. No. 389,045
Int. Cl. H05b *3/68*
U.S. Cl. 219—451 **5 Claims**

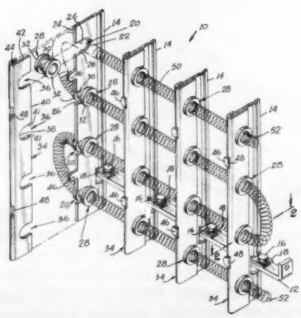


The present invention relates to a surface-type electric heating element including at least a pair of terminal pins extending from opposite ends of a convoluted sheath member, a blade carried by each terminal pin adapted for plug-in type connection, and an insulator permitting a lead-wire, screw-type connection of the surface unit to electric power. Because of the insulator both methods of connection of the surface-type electric heating element to electric power may be carried out with the terminal blades in the same disposition relative to the plane of the surface unit. The terminal blade includes a tapped thread to permit lead-wire, screw-type connection without the requirement of securing nuts.

3,812,322
HEATING ELEMENT ASSEMBLY

Charles Louis Osterkorn, North Brunswick, N.J.; Leo V. Buck, Effingham, Ill.; William W. Kloos, and Salvatore M. Marino, both of East Brunswick, N.J., assignors to Fedders Corporation, Edison, N.J.

Filed Aug. 24, 1973, Ser. No. 391,265
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 **2 Claims**

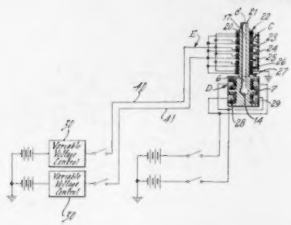


An assembly for supporting an open coil heating element is provided. The assembly includes an elongated arm to which is secured a plurality of cross-members. The cross-members each have cutouts therein which extend from an opening to an edge. A capping member is provided for each cross-member with each capping member having cutouts therein alinged with its associated cross-member cutouts. The heating coil is secured in position by a plurality of insulating bushings each of which is captured in part by the surfaces of the cross-member defining a cutout and in part by the surfaces of the capping member defining the associated cutout. The capping members are secured to the cross-members thereby rigidly securing the bushings and thus the heating coil in position.

3,812,323
ELECTRICAL HEATING BANDS FOR A FEEDING SYSTEM

Frank A. Pink, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1972, Ser. No. 303,573
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 **9 Claims**

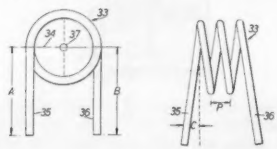


Heating bands and cartridge heaters, adapted to be mounted about cylindrical chambers, manifolds and nozzles conveying heated plastic from a feeding system to a molding assembly, are arranged so that spacing between heated elements of the bands can be increased or decreased depending upon whether one or more of the elements is energized. The bands are comprised of dual or multiple wound coils to provide fail-safe operation for the nozzles in the event one of the coils should be inoperative. A useful method to achieve the multiple winding is to first generate at least a dual threaded geometric, and then lay insulated conductors in the groovings between windings so that strands of independent coils are in parallel side-by-side relation throughout.

3,812,324
GLOW COIL IGNITOR

Joseph Gino Faffaelli, Granada Hills, and Reed Albert Palmer, Los Alamitos, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

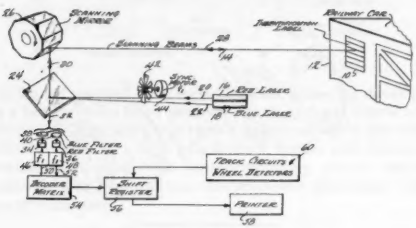
Division of Ser. No. 160,827, July 8, 1971, Pat. No. 3,774,077.
This application June 25, 1973, Ser. No. 373,090
Int. Cl. H05b *3/10*; **F23q** *7/10*
U.S. Cl. 219—553 **1 Claim**



A glow coil ignitor including a coil of molybdenum disilicide wire having straight end portions of approximately equal lengths, said coil being in the shape of a helix having an approximately constant inside diameter and pitch throughout its entire length. The wire having an approximately constant diameter throughout its entire length, the helix having an odd

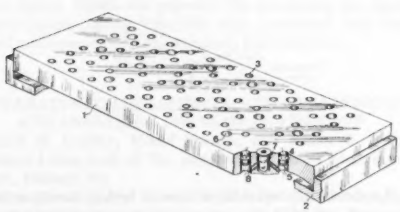
number of halt turns and at least 1½ turns, the wire end portions being connected to and being integral with the ends of said helix, and the axes of said wire end portions being positioned substantially tangent to the axis of said wire at the connections of said wire end portions with the respective ends of said helix.

3,812,325
MEANS FOR READING AND INTERPRETING COLOR-CODED IDENTIFICATION LABELS
Joseph J. Schmidt, Baltimore, Md., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio
Filed Aug. 18, 1970, Ser. No. 64,764
Int. Cl. G06k *7/12*
U.S. Cl. 235—61.11 E **5 Claims**



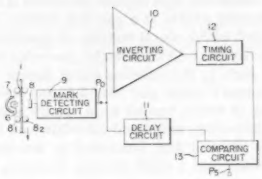
An improved system for automatically reading color-coded identification labels by scanning an incident light beam there across and sensing the color of reflected light wherein two laser sources are provided for producing light beams having approximately optimum wavelength spectra for reflection from colored reflective strips within the label and including means for effectively combining such beams into a single incident beam for use in scanning the identification label. A modification is also disclosed wherein each laser beam is individually modulated with a distinguishing code and the distinguishing codes are then detected in the reflected beam to indicate the presence of reflected wavelength spectra associated with a particular code.

3,812,326
OPTICAL MATRIX FOR READING CODED INFORMATION ON CARDS
Georges Galy, Toulouse, France, assignor to Societe D'Etudes De Poly-Techniques Sepotec, Paris, Seine, France
Filed Feb. 21, 1973, Ser. No. 334,439
Claims priority, application France, Feb. 25, 1972, 72.06496
Int. Cl. G06k *7/14*; **G01n** *21/30*; **H01r** *13/50*
U.S. Cl. 235—61.11 E **7 Claims**



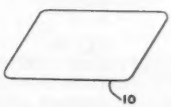
The matrix comprises a plate, against one working face of which is intended to be forced a support inscribed with coded information; the plate is provided with a plurality of internal housings arranged in such manner as to open into the working face level with printing zones of the support, by orifices having dimensions at most equal to those of conventional signs. Each housing corresponds to a printing zone and contains a light-sensitive element directed towards the working face and connected to means for treating the electrical information transmitted. The plate further comprises sources of light intended to illuminate with a predetermined intensity the printing zones of the support by channels opening into the housings of the light-sensitive elements close to the orifice of each of the housings. At each reading, the sources of light illuminate the printing zones of the coded support and the rays of light are reflected and diffused towards the corresponding light-sensitive elements with a different intensity, depending on whether the printing zone considered comprises a conventional sign or whether it does not have any.

3,812,327
MARK READER
Mutsuhiro Inoue, Sagamihara, and Kano Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 23, 1973, Ser. No. 344,288
Claims priority, application Japan, Mar. 28, 1972, 47-30954
Int. Cl. G06k *7/10*; **G08c** *9/06*
U.S. Cl. 235—61.11 E **5 Claims**



In order to eliminate error signals produced by presence of scratch, surface flaws or the like on a microfilm, a mark reader circuit is provided. The circuit comprises inverter means, timing means, delay means and comparator means so that only marks for cutting the film or other purposes are read out.

3,812,328
CREDIT CARD
Herbert Tramposch, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed May 31, 1972, Ser. No. 258,437
Int. Cl. G06k *19/02*; **G09f** *3/02*
U.S. Cl. 235—61.12 N **1 Claim**



A credit card blank is provided with a machine readable optical bar code that is imprinted on a desired panel area of the card, which panel area is covered by a very thin protective layer of transparent plastic material that is bonded to the adjacent card surfaces so as both to shield the bar code indicia from normal smudging and wear conditions and to facilitate the manual and automatic handling of the card.

3,812,329

SEMI-AUTOMATIC TYPE REGISTER APPARATUS FOR USE AT A GASOLINE SERVICE STATION

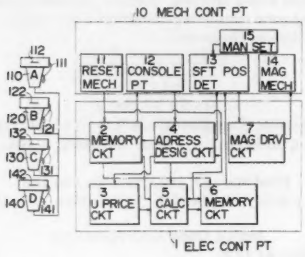
Hiyoshi Tatsuno, 4-4-11, Shirogane, Minato-ku, Tokyo-to, Japan

Filed June 2, 1972, Ser. No. 259,167

Claims priority, application Japan, June 15, 1971, 46-42142; June 22, 1971, 46-44489; June 25, 1971, 46-54472; Feb. 19, 1972, 47-16912

Int. Cl. G06m *3/06*

U.S. Cl. 235—92 FL 3 Claims



A semi-automatic type register apparatus is disclosed which is commercially usable at a gasoline service station and the like provided with a plural number of gasoline-meter devices in order to issue an oil service chit recorded therein with the requisites such as the gasoline-meter device number, price, date, customer's name and the like, and which is provided with a case in which housed is an electric control part functional to memorize, select and calculate said requisites and a mechanical control part functional to mechanically control said requisites, and a shaft position detecting device for the mechanical control part is connected via a drive mechanism to printing dials which are exposed on the top face of the case, thereby, figures on the printer dials are directly printed on the oil service chit by a manually operated roller.

3,812,330

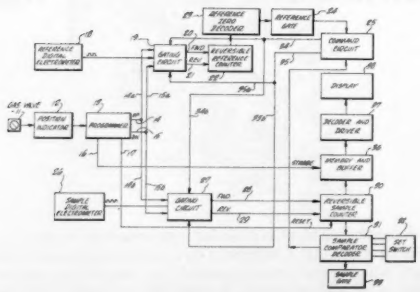
AUTOMATIC CALIBRATION CIRCUIT FOR GAS ANALYZERS

Lloyd D. Bowman, Crescenta; Manohar G. Karhade, South Pasadena, and Daniel I. Schneiderman, Hollywood, all of Calif., assignors to Dasibi Corporation, Glendale, Calif.

Filed Aug. 18, 1972, Ser. No. 281,819

Int. Cl. G06m *3/04*

U.S. Cl. 235—92 CC 10 Claims



A circuit for automatically correcting the electronic calibration count in a system for measuring the concentration of a radiation absorbing agent in a gas mixture. The ideal calibration count is a digital number which is proportional to a detector signal determined by the Beer-Lambert Law.

3,812,331

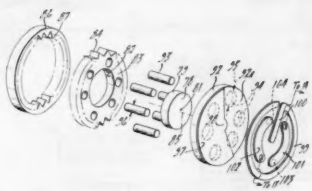
TRANSMISSION MOUNTED SPEED SENSOR WITH ODOMETER SWITCH

Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,407

Int. Cl. G01c *22/00*

U.S. Cl. 235—95 R 6 Claims



An electrically operated odometer system having a transmission-mounted sensor unit characterized by compactness and smoothness of operation. A wobble type planocentric gear reduction in combination with unique rotary switch means is employed to achieve such characteristics.

3,812,332

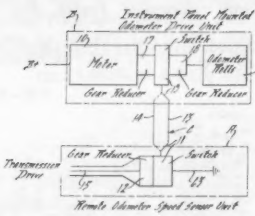
ELECTRIC ODOMETER DRIVE

Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1972, Ser. No. 312,431

Int. Cl. G01c *22/00*

U.S. Cl. 235—95 R 5 Claims

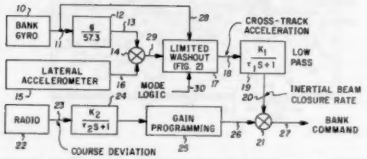


An electrically operated odometer system having a panel-mounted indicator unit and a remote transmission-mounted sensor unit, each characterized by compactness and smoothness of operation. Both units are related by an electrical circuit means employing a unique switching arrangement dependent in part upon the use of a wobble-type planocentric gear reduction to achieve space reduction a..d improve operation.

3,812,333
LAGGED ROLL SYNCHRONIZATION AND WASHOUT MEANS FOR AIRCRAFT LATERAL AXIS CONTROL SYSTEM

David W. Mineck, Cedar Rapids, Iowa, and Girard M. Manke, Los Angeles, Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Feb. 28, 1973, Ser. No. 336,673
Int. Cl. G06g 7/78; B64c 13/20
U.S. Cl. 235—150.2 **7 Claims**

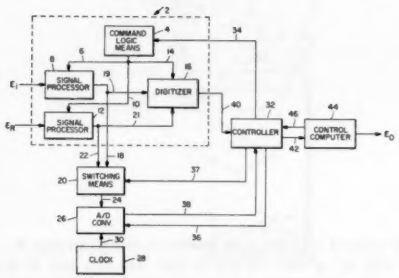


A limited washout and synchronization means for developing a beam closure rate signal from bank gyro and lateral accelerometer input sensors permits a lagged roll signal mix with radio deviation in a high gain control system and obviates problems associated with sensor mounting errors, sensor stand-offs, and gyro erection characteristics associated with aircraft maneuvers.

3,812,334
HIGH SPEED MEASUREMENT SYSTEM

Bernard P. Gollomp, Far Rockaway, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 8, 1972, Ser. No. 260,922
Int. Cl. G06j 1/00
U.S. Cl. 235—151 **5 Claims**



A digital multimeter and associated circuitry provides a high speed conversion, at precise increments, of analog input signals to a digital format while measuring and analyzing the input signals. Means are provided for correlating low speed measurements having relatively high resolution with high speed measurements having relatively low resolution.

3,812,335
APPARATUS FOR OBTAINING STATISTICAL INDICES AND ANALYZING THE SAME AND METHOD

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

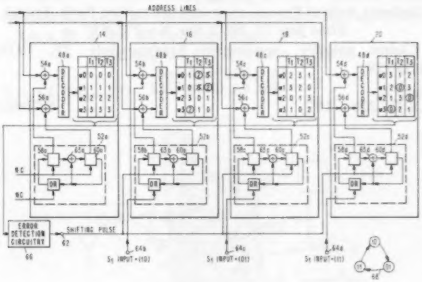
Continuation-in-part of Ser. No. 94,426, Dec. 2, 1970, Pat. No. 3,686,486. This application Aug. 23, 1971, Ser. No. 173,912The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.
Int. Cl. G06g 7/12; G01n 27/00
U.S. Cl. 235—151.3 **6 Claims**

Apparatus which receives a train of electrical pulses from a particle analyzing device such as one which is operated in accordance with the Coulter principle, derives statistical indices from such train of pulses, stores the same in suitable storage means, receives a second train of pulses and derives the same indices from the second train of pulses, and compares the two indices. A readout device provides the comparison information. In this manner indices from one particulate system, such as for example a known sample, may be obtained and thereafter the same indices from an unknown sample may be obtained and compared with the indices from the known sample for study and analysis of the unknown particulate system.

3,812,336
DYNAMIC ADDRESS TRANSLATION SCHEME USING ORTHOGONAL SQUARES

Douglas C. Bossen, Wappingers Falls; Connor F. Haugh, and Mu-Yue Hsino, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,163
Int. Cl. G11c 29/00; G06f 11/12
U.S. Cl. 235—153 AM **8 Claims**



This specification describes a scheme for swapping bits between words of a memory when a multiple error condition is detected in any word of the memory by a single error correction and multiple error detection system monitoring the memory. The swapping of the bits between the words is done in terms of orthogonal Latin squares insuring that no combination of any two bits is repeated in the reconfigured words. This insures that with a single swapping of the bits the detected multiple error condition is eliminated and makes it highly unlikely that another double error condition will be produced by the swapping.

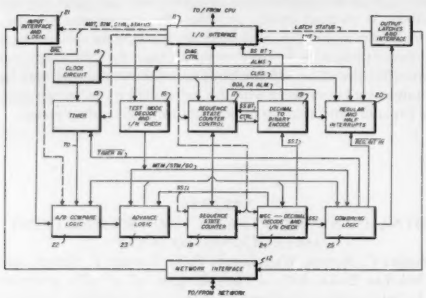
3,812,337
SEQUENTIAL CONTROL CIRCUIT HAVING IMPROVED FAULT DETECTION AND DIAGNOSTIC CAPABILITIES

Thomas Whitley Crosley, Northlake, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 6, 1973, Ser. No. 348,806
Int. Cl. H03k 21/34; G06m 3/12
U.S. Cl. 235—153 AC **25 Claims**

This invention relates to the architecture, fault detection and diagnostic capabilities of a sequential control circuit, or sequencer. The sequential control circuit can be instructed to test any of a number of circuits by executing one of several fixed sequences. The advance from one state to the next in the sequence is dependent on a combination of external signals

from the circuit under test, the present sequence state, and the test mode. The new sequence state, in combination with the



test mode, cause various actions to take place to further exercise the unit under test.

3,812,338

ANALOG FUNCTION GENERATOR

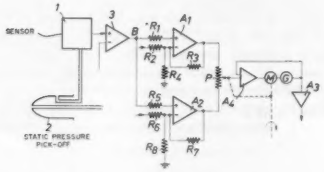
Andre Derre, Valence, and Jacques Jourdin, Granges-les-Valence, both of France, assignors to Crouzet, Paris, France

Filed July 27, 1972, Ser. No. 275,827

Claims priority, application France, July 29, 1971, 71.28179

Int. Cl. G06g *7/22*

U.S. Cl. 235—197 **8 Claims**



An analog function generator which generates a function, such as a hyperbolic function or a function in the neighbourhood of a hyperbolic function, of an input variable furnished in the form of a voltage. The generator comprises two linear amplifiers giving from a reference voltage two voltages which are linear functions of the input variable. A potentiometer is provided which receives at each end respectively the output voltages of the linear amplifiers, the displacement of the slider of the potentiometer being controlled so that the voltage available at the slider is equal to zero. Means are also provided for measuring the relative displacement of the slider with respect to the potentiometer.

3,812,339

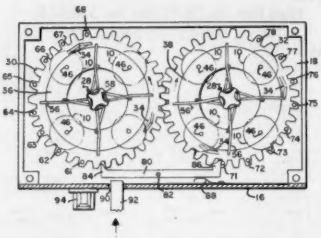
SELECTIVE ACTUATING MECHANISM FOR PERCUSSIVE PHOTOFLASH LAMP ARRAY

David R. Broadt, Lewisburg, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **20 Claims**

For a photoflash assembly comprising a plurality of percussively-ignitable flashlamps arranged in an array with respectively associated reflectors and preenergized striker springs, a self-energized selective actuating mechanism for sequentially releasing the striker springs to fire respective flashlamps in response to successive indexing. In one embodiment, the self-energized actuating mechanism comprises a coplanar train of intermeshing spur gears having a number of circumferentially spaced projecting ramps. The lamps and striker springs are supported on the end surfaces of shafts upon which the gears are mounted, with the strikers radially projecting over the surrounding gear to lie in the path of travel of the ramps. The gears are spring loaded to rotate when not locked in place by a



latch engaging one of a plurality of evenly spaced pins on the gears. To flash a lamp, the latch is momentarily released to permit rotational indexing of the gears, whereupon one of the ramps releases a striker. In another embodiment, a spring loaded slidable bar with ramps is linearly indexed in a similar manner.

3,812,340

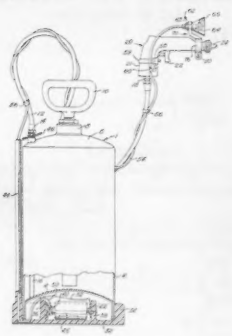
LIGHT FOR CHEMICAL SPRAYER

Michael W. Brandt, 802 Highpoint, Apt. 29, Stillwater, Okla.

Filed May 11, 1973, Ser. No. 359,350

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 FD **3 Claims**



An attachment for a portable chemical spray apparatus comprising a disc having an annular lip about the periphery thereof connectable to the lower end of a pressurized container for securing batteries under the container and forming a bumper about the edge of the container. A hollow tube through which wires extend has a lower end secured to the annular lip and has a loop about the upper end thereof positionable about a hose connecting the pressurized container with a spray gun. A light is mounted on the spray gun to illuminate an area prior to spraying insecticide thereon.

3,812,341

LOUVER STRUCTURE AND LUMINOUS CEILING UTILIZING SAME

Menachem Cohen, 16 Nachum St., Tel Aviv, Israel

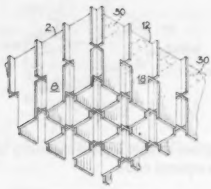
Filed Mar. 13, 1972, Ser. No. 234,290

Int. Cl. F21v *11/06*

U.S. Cl. 240—9 R **3 Claims**

A louver structure for a light fixture comprises a plurality of slats interlocking with each other to form a cellular egg-crate

construction, characterised in that the slats are formed with extensions projecting beyond the cells, the widths of the extensions being less than the width of the cells to provide spaces

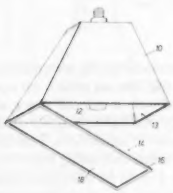


between contiguous extensions. A luminous ceiling is provided by the use of such louver structure in combination with lighting fixtures.

3,812,342
LIGHTING FIXTURE LENS

Albert C. McNamara, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,566
Int. Cl. F21v 11/00
U.S. Cl. 240—46.01 **8 Claims**



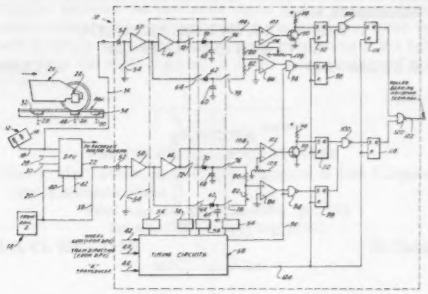
A lighting fixture combination including a housing enclosing at least one bulb and having an opening for light and a housing window across the opening comprising a thin film of fluorocarbon, preferably Teflon FEP. Also disclosed are various means for deforming the thin film to cause it to be stretched tautly across the opening and be secured securely in place.

3,812,343
ROLLER BEARING DISCRIMINATOR FOR A RAILROAD HOT BOX DETECTOR SYSTEM

Cornelius A. Gallagher, Syosset, and Arthur J. Glazar, Kings Park, both of N.Y., assignors to Servo Corporation of America, Hicksville, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,529
Int. Cl. B61l 1/20, 3/06, 23/02
U.S. Cl. 246—169 A **10 Claims**

A circuit is provided for distinguishing electrical signals generated by a hot box detector scanner in response to a passing roller bearing from those generated in response to a passing friction bearing. The circuit includes first and second capacitors for storing the maximum amplitude of each output signal wave from the scanner and for storing the maximum amplitude of each wave at a predetermined point. The ratio of the charges stored on the capacitors is then obtained. It has

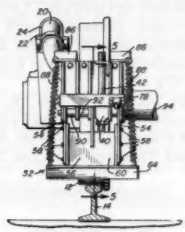


been found that for a roller bearing this ratio should approach unity while for a friction bearing the ratio is not close unity.

3,812,344
DERAILMENT ACTUATED AIR BRAKE CONTROL FOR TRAINS

Samuel Ranatza, 68 Hickory St., Harahan, La., and John C. Linn, Rt. 4, Box 50, Summit, Miss.

Filed Aug. 24, 1972, Ser. No. 283,285
Int. Cl. B60T 7/12
U.S. Cl. 246—171 **6 Claims**

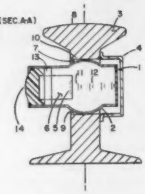


A railroad car truck is provided with an outwardly projecting support structure at one end from whose free end a depending lever arm is pivotally supported for oscillation about a horizontal transverse axis, the lever arm being swingable approximately 90° in either direction from a generally vertically disposed depending position. The lower end of the arm is provided with a crosshead for positioning a spaced distance above an associated rail when the wheels of the truck are on the rail and the crosshead is engageable with the rail when the wheels of the truck are derailed and drop downwardly alongside the rail. Contact of the crosshead with the rail causes the lever, which is maintained in a depending position by means of a shearpin, to swing rearwardly relative to the direction of travel of the truck and the lever is connected to a dump valve for the air brake system of the associated train car for opening the valve upon swinging of the lever passed a position angularly displaced 45° relative to the vertical position thereof. Spring means is connected between the support and the lever for yieldingly biasing the lever to a 90° rotated position in either direction once the lever is swung from its vertical position upon the shearing of the pin and the support includes a pair of electrical switches which are engageable by the lever upon swinging of the latter 90° in either direction from the vertical position of the lever. The switches may be connected in parallel within a signal circuit extending to the locomotive and having an electrically actuated signal device serially connected therein within the locomotive.

3,812,345
ULTRASONIC STRAIN TRANSDUCING SYSTEM

Albert E. Stone, Hopkins, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 19, 1972, Ser. No. 245,331
Int. Cl. B61l *13/04*; G01n *9/24*
U.S. Cl. 246—249 **11 Claims**



An ultrasonic strain transducing system has a hollow shell with a reference surface therein, the shell being positioned in a hole in a body in which the strain is to be measured. A crystal driven by electronic circuitry produces acoustical wave energy which is reflected back to the crystal by the reference surface. Motion of the reference surface in response to strain occurring in the body causes the crystal to change its complex electrical impedance which is sensed by the electronic circuit to provide an indication of the strain occurring.

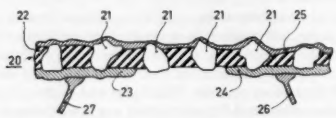
3,812,346
PHOTOSENSITIVE DEVICE WITH CONNECTION ELECTRODES ON MAJOR SURFACE AND FLOATING ELECTRODE ON OPPOSITE SURFACE

Albert Christiaan Aten; Johannes Gerrit Van Santen, and Fredericus Hendricus Ignatius Renirie, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 199,197, Nov. 16, 1971, abandoned, which is a continuation of Ser. No. 66,114, Aug. 21, 1970, abandoned, which is a continuation of Ser. No. 751,287, Aug. 8, 1968, abandoned. This application Jan. 26, 1973, Ser. No. 326,778

Claims priority, application Netherlands, Aug. 25, 1967, 6711759

Int. Cl. H01c *7/08*
U.S. Cl. 250—211 R **12 Claims**



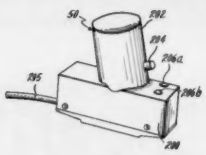
A photosensitive device is described in which both connection electrodes which convey current to and from the photosensitive layer, are provided on the same surface, and the opposite surface is provided with a single auxiliary electrode. A monograin layer construction is also described. Among the advantages are lower resistances and ease of manufacture.

3,812,347
OPTICAL READER

Russell E. Cunningham, Washington, D.C., and Gordon S. Light, Chevy Chase, Md., assignors to Sigma Systems, Inc., Arlington, Va.

Filed Oct. 3, 1972, Ser. No. 294,633
Int. Cl. G01n *21/30*; G06k *7/00*
U.S. Cl. 250—219 DC **10 Claims**

A hand held optical reader and apparatus for reading an octal digital code which contains a data digit field, an error checking count field and a parity field. The reader is designed for self-positioning over a code bearing label and the apparatus comprises simple logical circuitry to insure the correct reading of the optical code.



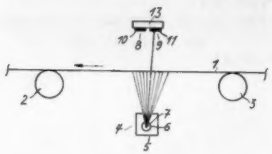
3,812,348
DEVICE FOR ELECTRO-OPTICALLY ASCERTAINING HOLES IN MOVING WEBS

Paul R. Lippke, deceased, late of Beringstr. 41, 545 Neuwied 1, Germany (by Rudolf Hiemke, executor)

Filed Nov. 20, 1972, Ser. No. 308,013

Claims priority, application Germany, Nov. 18, 1971, 2157247

Int. Cl. G01n *21/16, 21/32*
U.S. Cl. 250—561 **4 Claims**



A device for electro-optically ascertaining holes in moving webs of paper and the like, in which on opposite sides of the path over which the web is moved there are respectively arranged a light source and light sensitive means the inlet signals of which are conveyed to amplifiers. The light source includes a thread-shaped filament extending transverse to the direction of movement of the web to be checked, and the light sensitive means are arranged in pairs with the elements of each pair respectively arranged in two common rows located one behind the other and substantially parallel to the longitudinal direction of the filament, the elements of the light sensitive means of each pair being electrically opposed to each other in such a way that light simultaneously hitting both elements of one and the same pair of light sensitive means will not initiate a signal.

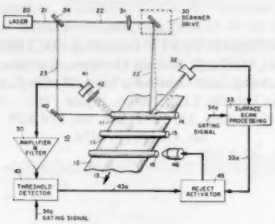
3,812,349
APPARATUS FOR INSPECTING CIGARETTES OR THE LIKE

George Gugliotta, Ridgefield, and Anthony J. Raimo, Waterbury, both of Conn., assignors to Laser Sciences, Inc.

Filed Apr. 6, 1973, Ser. No. 348,517
Int. Cl. G01n *15/08*
U.S. Cl. 250—223 R **3 Claims**

An apparatus for examining an end of a cigarette or the like to determine whether packed tobacco is present to substantially the edge of the cigarette wrapper. In accordance with the invention there are provided means for directing a narrow collimated beam of light, preferably a laser beam, along the axis of the cigarette and toward the end to be examined. A photodetector is positioned and oriented to receive light emanating from at least a portion of the wrapper surrounding said end. Further means, responsive to the output of the photodetector, are provided for generating an occurrence in-

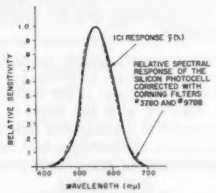
dication when the photodetector output exceeds a predetermined threshold level. In a preferred embodiment of the invention, means are provided for enabling the generating means only when a cigarette is present at a specified inspection position.



3,812,350
NOVEL ICI CORRECTED PHOTOTRANSDUCER FOR MEASURING LIGHT OUTPUT OF PHOTOFLASH ITEMS

Louis R. Szabo, Landing, and Martin Lazarus, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,837
Int. Cl. G01j *3/34*
U.S. Cl. 250—226 **1 Claim**

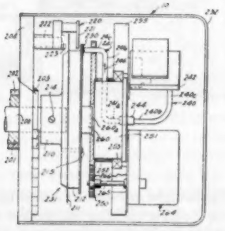

ICI RESPONSE
RELATIVE SPECTRAL RESPONSE OF THE SILICON PHOTOCELL CORRECTED WITH CORNING FILTERS 3780 AND 9788
RELATIVE SENSITIVITY
WAVELENGTH (mμ)

A phototransducer has a silicon photovoltaic cell corrected with two glass filters to the standard ICI spectral response equivalent to the spectral response of the human eye. Also, a method for correcting variations in the manufacture of the glass filters to adjust the filter to the thickness required for ICI correction of the silicon photocell.

3,812,351
ROTARY POSITION DETECTOR MACHINE CONTROL SYSTEM

Daniel A. Coberley, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.

Filed May 25, 1972, Ser. No. 256,727
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 SE **4 Claims**

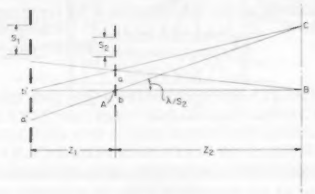


In the illustrated embodiment a rotary position detector utilizes an angularly adjustable light conduit for selecting the angle of the input shaft at which a reference signal is generated. In a web register control system where an analog error signal is to be generated according to any lack of coincidence between the reference signal and a scanner signal, such analog error signal can be utilized during set up (with the web properly registered) for automatic positioning of the light conduit at the angle required to define the register condition of the system.

3,812,352
ENCODER READOUT SYSTEM

Alan J. MacGovern, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Aug. 28, 1972, Ser. No. 284,382
Int. Cl. G01b *11/04*; H01j *5/02*
U.S. Cl. 250—237 G **16 Claims**



A system for reading out positional information from a linear or rotary encoder based on an extension of the pinhole imaging theory to include the effects of diffraction in the encoder. In a typical encoder, light from a radiation source is directed first through a code plate having thereon periodic markings of alternating transparent and opaque increments, then through a slit plate also having thereon periodic markings of alternating transparent and opaque increments, and then upon a detector. According to the teachings of this invention there are optimal positions for the encoder plate, the slit plate and the detector to obtain maximum readout signals from the encoder. These optimal positions are selected in theory according to two relationships which must be simultaneously satisfied, namely: $Z_1=nS_1S_2/\lambda$, and $Z_1=(S_1-S_2)Z_2/S_2$ where n is an integer of one or greater, λ is the mean wavelength of the light source, S_1 is the length of one clear increment-opaque increment period in the code plate, S_2 is the length of one clear increment-opaque increment period in the slit plate, Z_1 is the distance between the code plate periodic markings and the slit plate periodic markings, and Z_2 is the distance between the detector and the periodic markings on the slit plate.

3,812,353
METHOD FOR DETERMINING FORMATION PARAMETERS

James L. Gilchrist, Austin, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 6, 1971, Ser. No. 187,121
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **7 Claims**

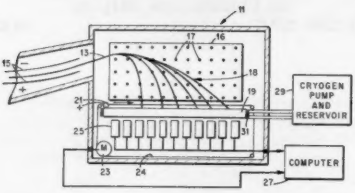
A method for determining formation parameters such as the effective porosity (ϕ_e), the formation fraction of bulk volume that is shale (ρ) and the formation matrix capture cross section (Σ_{ma}), utilizing predetermined thermal neutron capture cross sections of a first and a second injected fluid, and the thermal neutron capture cross sections of the formation flooded with the first injected fluid and subsequently flooded with the second injected fluid to determine the formation effective porosity (ϕ_e); and subsequently utilizing the determined values of the effective porosity (ϕ_e) and the formation neutron porosity (ϕ_n) and the porosity of the shale component of the formation (ϕ_{sh}) to determine the formation fraction of bulk volume that is shale (ρ); the determined values of (ϕ_e) and (ρ) being utilized to determine the formation matrix cross

section (Σ_{ma}). The method of the present invention thus provides determined data for calibrating the tool response of a gamma ray type logging tool.

3,812,354
THERMOLUMINESCENT DETECTOR FOR MASS SPECTROMETER

Edward G. Walter, Modesto, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 31, 1973, Ser. No. 365,658
Int. Cl. H01j *39/34*
U.S. Cl. 250—281 **10 Claims**

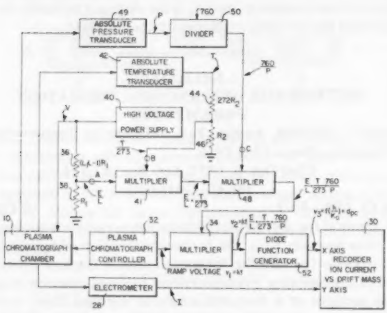


A magnetic field is used to deflect and separate the charged particles of an ion beam to impinge on successive areas of a long dielectric crystal according to the charge-mass ratio of the particles. After exposure to the deflected ions, a heated wire is moved over the crystal to produce thermoluminescence in the crystal that is detected with a bank of phototubes. The resulting signals from the phototubes are correlated with the areas of the crystal and counted to indicate the spectrum of the particles.

3,812,355
APPARATUS AND METHODS FOR MEASURING ION MASS AS A FUNCTION OF MOBILITY

Roger F. Wernlund, Lake Worth; David I. Carroll, Lantana; Wallace D. Kilpatrick, North Palm Beach, and Martin J. Cohen, West Palm Beach, all of Fla., assignors to Franklin Gno Corporation, West Palm Beach, Fla.

Filed Dec. 9, 1971, Ser. No. 206,353
Int. Cl. H01j *39/34*
U.S. Cl. 250—283 **23 Claims**

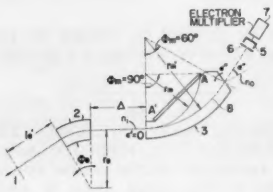


Ion mass is determined directly as a function of the drift time in a chamber containing gas at atmospheric pressure. The drift time is a function of approximately the cube root of the ion mass for ion mass greater than the mass of the drift gas and a function of approximately the square root of the ion mass for ion mass less than the mass of the drift gas. A measure of the ion mass may be obtained by recording the ion-current output of the drift tube with the time base adjusted to an exponential function of the drift time. Corrections may be made automatically for variations in temperature, pressure and drift field.

3,812,356
MASS-SPECTROMETER OF DOUBLE FOCUSSING TYPE

Eisuke Mitani, Hachioji; Hitoshi Isuyama, Kodaira; Michiyasu Itoh, Kokubunji, and Shunroku Taya, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1971, Ser. No. 174,039
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 ME **2 Claims**



In a mass-spectrometer of the double focussing type, output ions from an electric field analyzer are applied to a magnetic field analyzer so constructed that the condition indicated by the following equation,

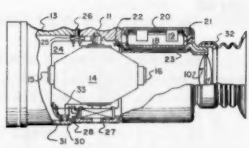
$$\cos\epsilon' \cos\epsilon'' = \sin(\phi_m' - \epsilon' - \epsilon'')$$

is satisfied therein, where ϕ_m' is the deflection angle of the magnetic field analyzer, ϵ' is the angle of incidence of the input ions with respect to the magnetic field analyzer and ϵ'' is the angle of divergence of the output ions focussed at the outside of the magnetic field analyzer.

3,812,357
MINIATURE INFRARED SHORT RANGE THERMAL IMAGER (MISTI)

William S. Flogaus; Howard T. Graves, both of Alexandria; Harold J. Orlando, Woodbridge, and Dennis P. Van Der Laske, Alexandria, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1972, Ser. No. 317,319
Int. Cl. G01j *5/02*
U.S. Cl. 250—332 **10 Claims**

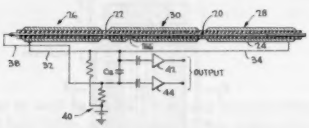


A compact lightweight infrared to visible image converter is disclosed having a single circular oscillation circuit board assembly which carries all of the electronics except the power supply. An array of light emitting diodes is coupled to an array of infrared detectors both of which are mounted on the above to scan in unison.

3,812,358
COAXIAL ANODE WIRE FOR GAS RADIATION COUNTERS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and William L. Kraushaar, 1003 Oak Way, Madison, Wis.

Filed June 21, 1973, Ser. No. 372,148
Int. Cl. G01t *1/18*; H01J *39/28*
U.S. Cl. 250—385 7 Claims

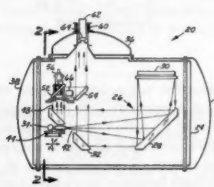


A coaxial anode construction for a gas radiation counter is disclosed by which undesirable background ionization interference may be suppressed. The anode comprises an elongated central wire covered with an electrically insulating sleeve. A plurality of longitudinally discontinuous segments of an electrically conductive coating is disposed about the insulating sleeve in coaxial relationship to and along the length of the central wire. In the preferred inventive embodiment, the plurality of conductive coating segments define a so-called veto or rejection anode at each end portion of the central wire and a main or primary charge detecting anode disposed therebetween. Coupling means are connected to each of the segments such that the primary charge detecting anode is connected to detection circuitry in anti-coincidence with the veto anodes. Background radiation detected by either of the veto anodes and the primary charge detecting anode is therefore rejected and the sensitivity of the radiation counter device is increased.

3,812,359
EXOATMOSPHERIC ENVIRONMENTAL TEST APPARATUS

Rudolf H. Meier, Santa Ana; Richard P. Day, San Juan Capistrano, and Christopher J. C. Thompson, Costa Mesa, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 24, 1972, Ser. No. 283,494
Int. Cl. G01t *1/16*
U.S. Cl. 250—347 21 Claims

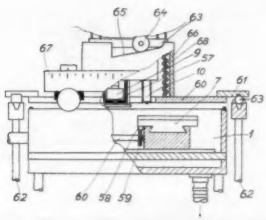


Advanced sensor evaluation and test apparatus comprises a vacuum chamber with an inner cryoshroud, housing an on-axis optical parabolic collimator, a radiant energy source assembly having an output aperture located in the focal plane of the collimator, a calibration monitor consisting of a Cassegrainian type radiometer that occupies one portion of the collimated radiant energy beam and which forms an image of the source on a bolometer, and a pair of scanning mirrors directing energy from another portion of the collimated beam into the entrance aperture of the optical sensor under test. In addition, a background radiant energy generator can direct radiant energy simulating elevated radiation background to the sensor under test which, in turn, forms an enlarged image of the background source in its own detector plane. One version of the source assembly includes at least one blackbody radiation source of variable aperture and temperature with a chopper operating to provide modulated radiation which is projected into an integrating sphere coupled with a source projector. An adjustable dual reflector with one specularly and one diffusely reflecting surface is mounted inside the integrating sphere and can be rotated to predetermined orientations to function in either a specularly reflecting mode or diffusely reflecting mode. In a third mode of operation, the mirror is rotated into an inactive orientation in which it does not intercept the beam entering the integrating sphere. This is the integrating sphere mode of operation. Another version of the source assembly includes at least one blackbody radiation source providing radiation to an integrating sphere coupled with a radiation guide (pipe). The radiation guide can be either a single or dual guide (pipe) and is cooperatively structured to operate with selected transmission patterns (transparent portions) on a movable disc sector positioned at the end of the guide.

3,812,360
METHOD AND ARRANGEMENT FOR DETERMINATION OF PLANAR DISTRIBUTION OF LOW-ENERGY BETA NUCLEIDES AND OTHER RADIONUCLEIDES FOR TRACER EXPERIMENTS IN BIOLOGICAL, BIOCHEMICAL AND CHEMICAL EXPERIMENTAL SYSTEMS

Richard Tkyva, Praha, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed July 6, 1971, Ser. No. 159,974
Claims priority, application Czechoslovakia, July 8, 1970, 4804-70
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R 12 Claims



The planar distribution of low-energy beta nucleides and other radionucleides in different specimens is determined by placing a specimen in a camera, provided with a semiconductor detector, generating a relative scanning movement between the specimen and the detector and evaluating the thus obtained impulses while controlling the scanning as to the length of individual steps and accuracy and determining simultaneously the contours of the specimen.

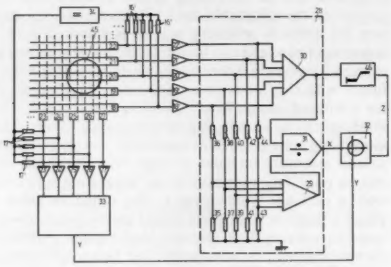
3,812,361
PROCESS AND APPARATUS FOR VISUALIZING GAMMA RAY IMAGES

Rudolf Prag, Marloffstein, and Joachim Dierker, Buckenhof, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Nov. 3, 1971, Ser. No. 195,345
Int. Cl. G01t *1/24*
U.S. Cl. 250—370 5 Claims

A process and a device for visualizing gamma ray images use a semi-conducting plate which is provided on both sides with electrode strips extending parallel to each other, the direction of the strips on one side extending at an angle to the direction of strips on the other side. The invention is particularly characterized in that the gamma quanta are changed into

electron bundles and are represented upon the semi-conducting plate. The electrode strips are connected with a device for



core formation which produces representable local signals localizing the electron bundle striking the semi-conducting plate.

3,812,362

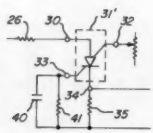
SMOKE DETECTOR CIRCUIT

Larry D. Larsen, Palatine, and Edward F. Kobek, Chicago, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 2, 1973, Ser. No. 376,011

Int. Cl. G01t 1/24

U.S. Cl. 250—370 **9 Claims**



A combustion products detector system of the type having at least one ionization chamber, the combustion products sensing ionization chamber being open or accessible to the surrounding air. The output signal voltage from the chamber is connected through an FET to a four terminal voltage comparator switch, which four terminal switch has an easily adjustable threshold voltage.

3,812,363

PROBE FOR MEASURING CHARACTERISTICS OF SUBSURFACE AND GROUND WATER FLOW

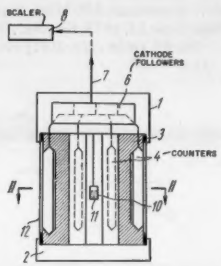
Abakar Abakarovich Abdullaev, kvartal 2, 11, kv. 31, massiv Chilanzar, Tashkent, U.S.S.R.

Filed Nov. 18, 1971, Ser. No. 199,850

Int. Cl. G21h 5/02; G01n 23/12

U.S. Cl. 250—388 **1 Claim**

A probe for determining the characteristics of subsurface and ground water flow by a single-well method with the aid of radioactive isotopes, wherein a radioisotope radiation receiver consists of at least three gas-discharge counters each of which is separately connected with a device which registers pulses carrying information about the characteristics of the subsurface or ground water flow being measured. The gas-discharge counters are fastened in longitudinal slots of a hollow protective shield of a cylindrical shape formed at equal distances on its outer surface. The shield has open lengthwise grooves between the longitudinal slots, while inside the shield there is disposed a shell with enclosed radioactive isotopes so that the radioactive isotopes carried out of the well by the subsurface



of ground water flow through the lengthwise grooves and, act upon the gas-discharge counters disposed in the longitudinal slots in the immediate vicinity of the well water outflow.

3,812,364

METHOD AND ARRANGEMENT FOR DETERMINING THE C-CONTENT IN CHEMICAL PROCESSES

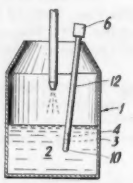
Michael J. Higatsberger, Graf. Starhemberggasse 6/9, 1040 Vienna; Karl O. Rumpold, Freunbichlerweg 6, 1140 Vienna, and Franz P. Viehbock, Wiener Bruckstrasse 53, Maria, all of Austria

Filed Sept. 30, 1970, Ser. No. 76,997

Claims priority, application Austria, Oct. 2, 1969, 9314/69

Int. Cl. G21h 5/02

U.S. Cl. 250—395 **7 Claims**



Continuous neutron activation analysis of a material undergoing chemical processing uses the intermittent bombardment of the material by a flux of neutrons of specific energy. The periods of bombardment alternate with periods of gamma ray analysis. The length of exposure time to the neutron flux and the time intervals between successive exposure periods, as well as the relation between these values and the half-life values of the nucleides are essential parameters in determining the carbon content of the material.

3,812,365

PERMANENT MAGNET LENS SYSTEM

Jan Bart LePoole, 5, Nassaulaan, Deleft, Netherlands

Filed Mar. 9, 1973, Ser. No. 339,881

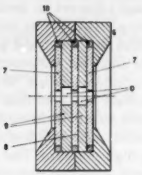
Claims priority, application Netherlands, Mar. 10, 1972, 7203264

Int. Cl. H01j 37/00

U.S. Cl. 250—396 **5 Claims**

A magnetic lens system, in particular for an electron microscope, comprising two thin small disc magnets, provided

with small openings and magnetized axially in opposite directions, which are united straight into an electron-optic



achromatic as well as rotation-free and distortionfree system that forms lens fields, at a distance that is practically equal to the diameter of the small openings.

3,812,366

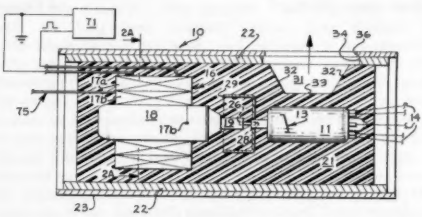
COMPOSITE X-RAY TUBE/TRANSFORMER ASSEMBLY

Nicholas M. Gralenski, Aptos, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Mar. 8, 1971, Ser. No. 122,040

Int. Cl. H05g 1/06

U.S. Cl. 250—421 **5 Claims**



An elongated X-ray generating tube including a high voltage terminal is disposed in tandem with a high voltage transformer located proximate to the tube and axially aligned therewith. The high voltage terminal is interconnected with the transformer core located centrally of the transformer. An enclosure disposed around the transformer and tube includes a window for transmitting X-rays therethrough while the transformer and tube are embedded or potted as a unit within the enclosure.

3,812,367

ELECTRON BOMBARDMENT ION SOURCE FOR A MASS SPECTROMETER HAVING A NONSPECULAR INNER SURFACE

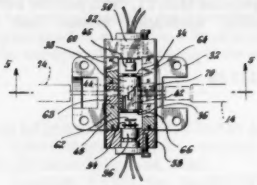
Edward B. Delany, 70 Powder Horn Ln., Ridgefield, Conn., and Ralph E. Mayo, 321 Crestview Cir., Media, Pa.

Continuation of Ser. No. 47,667, June 19, 1970, abandoned, which is a continuation-in-part of Ser. No. 682,467, Nov. 13, 1967, abandoned. This application Feb. 28, 1972, Ser. No. 230,106

Int. Cl. H01j 39/34

U.S. Cl. 250—427 **4 Claims**

An ion source for a mass spectrometer includes means defining an ionization chamber having a longitudinal axis, an electron source, and an anode electrode for accelerating electrons in a beam through the chamber along the axis. The ionization chamber is arranged in a geometrical configuration adapted for enhancing collisions with sample particles introduced to the chamber. The chamber is defined by a substantially continuous, cylindrically-shaped wall and includes a sample entrance aperture having a cross section equal to or less than the cross section of the electron beam. By this arrangement, the probability of collision between sample particles and the electron beam is increased and the number of ions thereby generated is substantially increased.



3,812,368

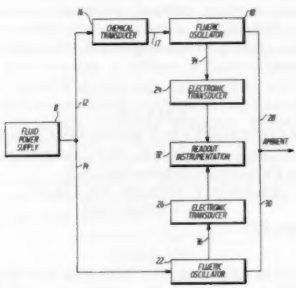
ENERGY DEPOSITION CHEMICAL TRANSDUCER UTILIZED IN FLUERIC SENSING SYSTEM

Maurice F. Funke, Adelphi, Md., and James F. Bald, Jr., Jersey City, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1973, Ser. No. 360,701

Int. Cl. G01t 1/00

U.S. Cl. 250—432 **8 Claims**



Apparatus for quantitatively determining the presence of electromagnetic radiation, thermal energy or high energy particles in a controlled environment by exposing certain chemical compounds which generate active chemical species in response to exposure to such electromagnetic radiation, thermal energy or high energy particles. The presence of the active or volatile species causes a change in frequency in the output of a flueric oscillator connected to receive a mixture of a power supply fluid and the volatile species. The system includes a second flueric oscillator that has as its single input the power supply gas. The output from the two flueric osicllators are each delivered to a pair of electrical transducers that convert the fluid signals into proportional electrical signals. The electrical signals are fed in turn to readout instrumentation which provides a quantitative comparison of the electrical signals that is directly proportional to the quantity and temperature of the active chemical species and thus, to the level and/or intensity of thermal energy, electromagnetic radiation or high energy particles that produced same.

3,812,369

SOLID-STATE SEQUENTIAL SWITCHING DEVICE

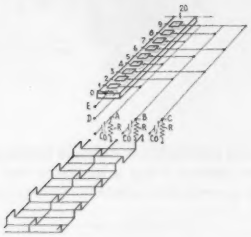
Henri Rougeot, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 203,229, Nov. 30, 1971, abandoned. This application Mar. 21, 1973, Ser. No. 343,275

Claims priority, application France, Dec. 23, 1970, 70.46505

Int. Cl. G02f 1/28

U.S. Cl. 250—217 SS 6 Claims



A sequential switching device using solid-state components, consisting in a bar of gallium arsenide monocrystal, in which adjacent diodes are formed, the terminals of same sign of which are arranged on the two opposite faces of the bar. These diodes, which are virtually insulators below a certain threshold voltage applied to their terminals are conductive beyond it; they emit photon radiation in the conductive condition, and, conversely, change from the insulating to the conductive condition under the effect of said photon radiation. By combining these diodes in sets of three in order to form three groups to the terminals, of which there are applied voltage pulses which succeed one another without interruption or overlap, propagation of switching along the set of diode is achieved, each diode irradiating its two neighbours, when in the conductive condition.

3,812,370

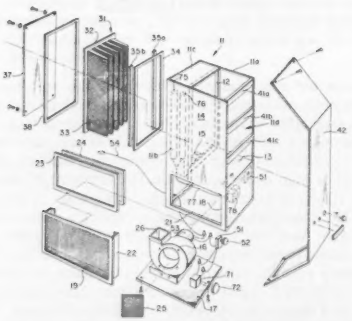
LOW COST PORTABLE ROOM AIR CLEANER

Fred G. LaViolette, Schenectady, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,106

Int. Cl. B01d 31/00

U.S. Cl. 250—527 16 Claims



A portable, compact, low cost, highly efficient room air filter for cleaning the room air of homes, offices and the like and which can be placed in the room in the manner of an article of furniture and plugged into a conventional household outlet of alternating electric current without requiring complex air ducting installations or other similar modifications. The room air filter includes a housing and a high volume air fan mounted within the housing. The fan has its discharge directed into a high pressure plenum formed in the housing and has its intake disposed adjacent an intake grill mounted on the exterior of the housing for supplying suction air to the high volume fan. A coarse fiber, large particle prefilter and a charcoal or other type odor filter are disposed in the suction air passageway between the intake grill and the intake of the high volume fan, and a relatively low cost fine fiber small particle filter is disposed adjacent to and defines one side of the high pressure plenum chamber into which the high volume fan discharges at relatively high pressure. The small particle filter has its discharge diffusely directed exteriorly of the housing whereby suction of the room air through the intake grill, the rough particle prefilter and the odor filter into the fan and the high velocity discharge of the fan into the high pressure plenum and through the fine fiber small particle filter results in diffuse circulation and cleaning of the room air whereby substantially 90 percent of all particles usually found in room air which are larger than 0.005 microns in size are removed along with a substantial reduction of odors.

3,812,371

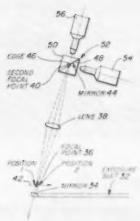
SCANNING BEAM POSITION INDICATOR

Dick Yen Chin, Newton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 22, 1972, Ser. No. 291,500

Int. Cl. G02f 1/28

U.S. Cl. 250—217 R 10 Claims



A line start pulse generator for a laser beam recorder. In a typical laser beam recorder, a modulated laser beam is swept in a line scan across the width of a film strip. During the line scan, the film strip is transported a small increment in a direction transverse to the line scan. A second line is then recorded closely adjacent to the first line scan, and etc. for subsequent line scans. Tolerances within a typical laser beam recorder allow the exact lateral position of each line scan to vary from scan to scan. The disclosed invention generates a line start pulse to ensure that each line of recorded information is started at the same position relative to the film strip which results in accurate line to line registration on the film strip.

The line start pulse generator is placed at the beginning of a line scan across the film strip, and includes a beam splitter consisting of a mirror having an edge positioned transverse to the line scan. As the laser beam starts a line scan, it initially impinges upon the mirror which deflects the scanning beam onto a first photodiode. The scanning beam then traverses across the mirror edge onto a second photodiode. During this traversal by the laser beam there is a transition period during which the amplitude of the signal from the first photodiode is rapidly declining and the amplitude of the signal from the second photodiode is rapidly increasing. A comparator circuit, connected across the first and second photodiodes, detects when the amplitude of the second diode is equal to or greater than the amplitude of first diode, and generates a line start pulse at that instant. The line start pulse accurately in-

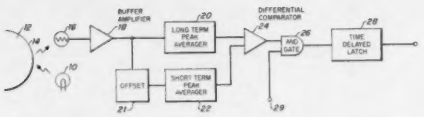
dicates the starting position for the laser beam, and commands a data buffer to begin transmitting video to be recorded during that line scan.

3,812,372

SYSTEM FOR DETECTING A CHANGE IN LIGHT INTENSITY

John S. Wirtz, Henrietta, and David C. Nellis, Victor, both of N.Y., assignors to Itek Corporation, Lexington, Mass.

Filed Dec. 26, 1972, Ser. No. 318,129
Int. Cl. G01n *21/32*
U.S. Cl. 250—561 **12 Claims**



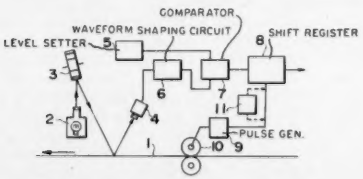
Apparatus for inactivating a direct lithographic press in response to the detection of a sheet of paper being undesirably stuck to the lithographic plate in the machine. The paper detection system includes a light source for illuminating the lithographic plate and a photodetector for detecting illumination reflected from the plate. The output of the photodetector is directed to two RC integrating circuits, one circuit having a relatively long RC time constant and the second circuit having a relatively short RC time constant. The integrating circuit with the long time constant follows slow changes in reflectance in the machine, and provides a self-adjusting reflectance reference. The slight contrast caused by the presence of the sheet of paper on the lithographic plate causes the output of the short time constant RC circuit to rise with respect to the output of the long time constant RC circuit. A comparator means coupled to the outputs of both RC circuits detects this increase, and produces an output signal which is directed to an AND gate. The AND gate has a second input for indicating that sheets of paper are being fed through the machine. When the AND gate receives both input signals, it produces an output signal which is directed to a time delayed latch circuit. When the AND gate produces an output signal for a period of time longer than the time delay of the latch circuit, the latch circuit produces an output signal to disable the machine.

3,812,373

METHOD AND APPARATUS FOR IDENTIFYING THE PERIODICITY OF SURFACE DEFECTS OF STRIP MATERIALS

Toshiaki Hosoe; Yuji Okami; Katsumi Michishita, and Shuzo Fukuda, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed June 13, 1973, Ser. No. 369,742
Claims priority, application Japan, July 31, 1972, 47-76008
Int. Cl. G01n *21/16, 21/30*; G06f *7/38*
U.S. Cl. 250—562 **13 Claims**



There are provided in optical defect detector to produce pulse signals representing the surface defects and a pulse generator driven by a continuously moving strip material for producing shift pulse signals synchronized with the moving speed of the strip material. The pulse signals and the shift pulse signals are applied to a shift register including a plurality of register circuits. An AND gate circuit is used to provide a logical product of the predetermined ones of the register circuits which are spaced apart a predetermined spacing and when the logical product is equal to a predetermined value, a binary "1" for example, the periodicity of the surface defects is identified.

3,812,374

SPECULAR REFLECTION SUPPRESSION APPARATUS

Richard H. Tuhro, Norwood, Mass., assignor to Computer Identics Corporation, Westwood, Mass.

Filed Feb. 5, 1973, Ser. No. 329,752
Int. Cl. G01n *21/30*; G02f *1/18*; G06k *7/00*
U.S. Cl. 250—568 **1 Claim**

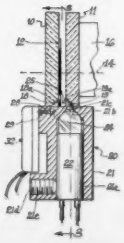
In a system for reading a diffuse reflective label, apparatus for suppressing specular reflections comprising a source of polarized radiation having a first polarization; means for providing relative motion between the label and polarized radiation for scanning a diffuse reflective label with the polarized radiation of the first polarization; and means for receiving diffusely reflected radiation having random polarization and specularly reflected radiation having the first polarization including polarizing means for selectively blocking specular reflections having the first polarization and passing radiation having other polarization for increasing the signal to noise ratio of the diffusely reflected radiation to the specularly reflected radiation.

3,812,375

MEANS FOR SENSING MOVING WEB MATERIAL

Chester S. Rempala, Chicago, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Apr. 5, 1973, Ser. No. 348,285
Int. Cl. H01j *39/12*
U.S. Cl. 250—570 **7 Claims**



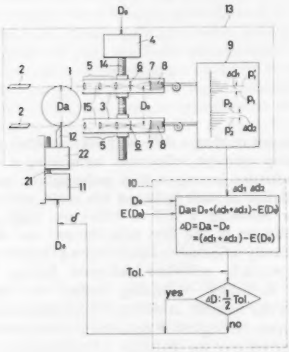
. The microfilm strip has frame marks or "blips" spaced along the length of the film adjacent one margin thereof. A

pair of glass flats are mounted on each side of the path of movement of the film and define a film gate. The glass flats include respective inclined reflective surfaces arranged to cooperate with a source of light for directing a beam of the light along a path which passes through the marginal portion of the film containing the frame marks. The sensing means is responsive to interruptions in the light beam caused by passage of the frame marks on the microfilm. The arrangement of the aforesaid reflective surfaces permits the light source and the sensing means to be physically located beyond the edge of the film defining the aforesaid marginal portion such that the components of the sensing system do not interfere with projection or viewing of the image transparencies on the film.

3,812,376
DEVICE FOR CONTROLLING DIMENSIONAL ACCURACY DURING MACHINING OF A CYLINDRICAL WORKPIECE

Hidehiko Takeyama, and Koji Takada, both of Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation-in-part of Ser. No. 227,579, Feb. 18, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,065
Int. Cl. G01b *7/12*
U.S. Cl. 250—572 **5 Claims**



The invention disclosed provides a device having means for emitting two beams of laser light in parallel and in contact respectively with an upper edge and a lower edge of a rotating cylindrical workpiece while under machining conditions such as in a lathe. The two laser beams hit the workpiece edges and then enter respective light receivers wherein diffraction images of the upper and the lower edges of the workpiece, which are sharpened by means of an optical filter, are defined on image planes formed with optical fibers. Intensity distributions of the diffraction images are converted into electric signals and processed in order to identify the diameter at the machining point of the workpiece. In case the difference between the detected diameter and a desired diameter exceeds a specified value of allowable error, a correction signal is transmitted from a provided means which causes a tool position controlling device to adjust the position of the tool, thus ensuring accurate turning of the workpiece within a specified tolerance while rotating in the course of machining.

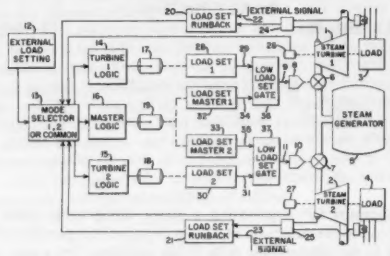
ERRATUM

For Class 250—578 see:
Patent No. 3,811,648

3,812,377
SYSTEM FOR INDEPENDENT OR COMMON CONTROL OF PRIME MOVERS

Paul E. Malone, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,942
Int. Cl. F01d *15/10*
U.S. Cl. 290—4 **5 Claims**

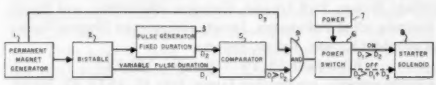


A system is provided for controlling the load settings of a group of prime movers such as steam turbines either independently or in a common mode. A master load setting for the group of prime movers is compared with an individual load setting for each of the prime movers and the lowest load setting value is selected as a load command signal. Isolation between prime mover control systems is provided by load setting motors serving as memory devices in the event that power is lost to one of the control systems. Provision is made for load removal either from individual prime movers or from the entire group.

3,812,378
AIRCRAFT STARTER CONTROL SYSTEM

William E. Coman, Newport, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 9, 1972, Ser. No. 233,196
Int. Cl. F02n *17/00*
U.S. Cl. 290—38 **24 Claims**

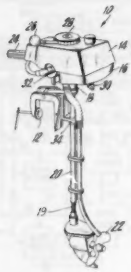


A control system for automatically closing a solenoid-operated air valve that supplies pressurized air to rotate an air turbine starter motor of an aircraft engine when the starter rotor reaches a predetermined rotational speed. The control system senses rotation of the starter rotor and produces a pulse train wherein each of the pulses generated has a duration which is a function of the rotational speed of the starter rotor and compares each pulse duration to a reference pulse which corresponds to a predetermined rotational speed of the starter rotor. When the duration of the rotor pulses decreases to a point where they are shorter in duration than a reference pulse, the supply of pressurized air is removed from the starter, thereby removing power from the starter at the predetermined speed.

3,812,379
GASOLINE ENGINE AND ELECTRIC MOTOR SYSTEM FOR BOATS OR THE LIKE

Bernard Kaufman, 2708 Healy Ave., Far Rockaway, N.Y., and William Kitovich, 233 Chicopee, Chicopee Falls, Mass.

Filed Aug. 4, 1972, Ser. No. 277,986
Int. Cl. B60l *11/12*
U.S. Cl. 290—50 9 Claims

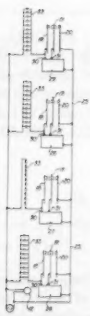


A combination propulsion system for boats or the like is provided comprising a first, gasoline engine, a second, electric motor and means for coupling the motor to the engine whereby the electric motor may be reversed and used as a generator when the gasoline engine is running for recharging a battery.

3,812,380
CONTROL FOR CHRISTMAS TREE LIGHTING

George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md.

Continuation-in-part of Ser. No. 242;627, April 10, 1972, Pat. No. 3,748,488. This application Mar. 19, 1973, Ser. No. 342,433
Int. Cl. H05b *37/00*
U.S. Cl. 307—11 13 Claims

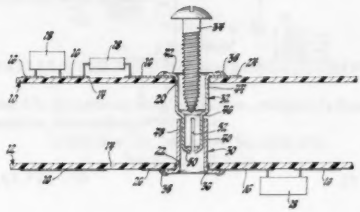


A control for Christmas tree lighting wherein a plurality of varying light intensity effects are produced and in a predetermined sequential order throughout all the lighting strings of a tree to result in a twinkling or shimmering effect heretofore unobtainable with any form or combination of flasher.

3,812,381
CIRCUIT BOARD CONNECTOR WITH SCREW FASTENER

James H. Guyton, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 4, 1973, Ser. No. 366,654
Int. Cl. H05k *5/00*
U.S. Cl. 317—101 D 4 Claims

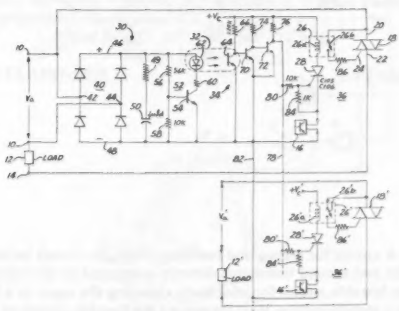


Two spaced parallel electrical circuit boards are electrically interconnected by a fastener comprising two tubular eyelets one each soldered to a conductive pad on a circuit board, one eyelet telescoping within the other and having a shoulder for establishing the circuit board spacing. The inner eyelet is slotted to allow expansion against the I.D. of the other eyelet. A selfotapping screw is threaded into the inner eyelet to force it against the wall of the other eyelet to establish a firm engagement to securely connect the circuit boards with minimal stress on the circuit boards.

3,812,382
SYNCHRONOUS SWITCHING CIRCUIT

Joseph E. Pascente, Norridge, Ill., assignor to Grigsby-Barton, Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 231,752, March 3, 1972, which is a continuation-in-part of Ser. No. 76,132, Sept. 28, 1970, Pat. No. 3,668,422. This application Aug. 25, 1972, Ser. No. 283,708
Int. Cl. H01h *9/56*
U.S. Cl. 307—133 11 Claims

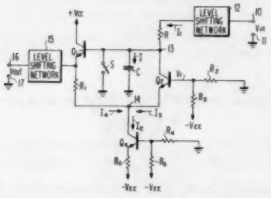


A switching circuit for controlling the application of an a.c. source to a load employs a detector for selectively triggering a control thyristor at a zero-voltage crossing of the source and means for latching the control thyristor during succeeding cycles of the a.c. source. The control thyristor is employed to latch a switching thyristor which, in turn, applies the power from the a.c. source to the load.

3,812,383
HIGH SPEED SIGNAL FOLLOWING CIRCUIT

Norman Richard Scheinberg, Westfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1972, Ser. No. 273,535
Int. Cl. H03k 4/50
U.S. Cl. 307—228 36 Claims

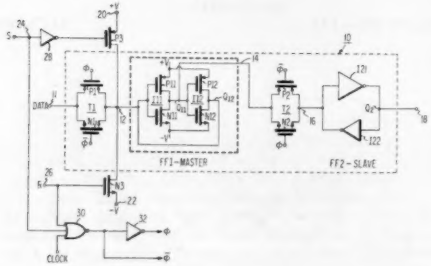


One main electrode of a first and of a second transistor have a common connection with a constant current sink. An input signal is simultaneously applied to the other main electrode of the first transistor and the control electrode of the second transistor. The output signal is taken from the one main electrode of the second transistor and represents an amplified version of the input signal. When a capacitive energy storage means is connected in circuit with the control electrode of the second transistor, the circuit provides a high speed signal integrating function.

3,812,384
SET-RESET FLIP-FLOP

Gordon Edward Skorup, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1973, Ser. No. 361,304
Int. Cl. H03k 3/286, 3/33, 17/22
U.S. Cl. 307—238 5 Claims

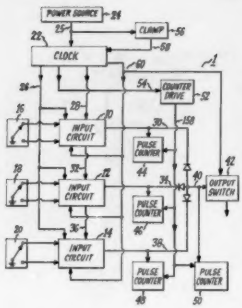


A circuit for setting and resetting a bistable circuit includes first and second transistors directly connected to the input of the bistable circuit for selectively clamping the input to a first or a second voltage level for setting the bistable circuit to one state or resetting it to the other state. In a bistable circuit comprised of a master flip-flop coupled to a slave flip-flop by a transmission fate, the set-reset circuit includes first and second transistors directly connected to the input of the master and also includes means for enabling said transmission gate concurrently with the torn on of said first or second transistors for transferring the output of the master to the slave.

3,812,385
SOLID STATE TOTALIZER

Richard G. Farnsworth, York, Maine, assignor to General Electric Company

Filed June 23, 1972, Ser. No. 265,810
Int. Cl. H03k 17/00, 17/02
U.S. Cl. 307—243 13 Claims

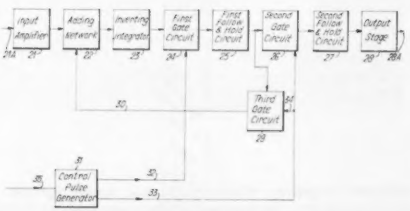


A totalizer which acts as a summation relay to connect a number of measuring devices to a single recording end device. In the totalizer, an independent timing pulse source is employed to actuate individual input circuits connected to the various measuring devices. The totalizer is designed so that the pulse rate of the timing pulse source does not have to be changed each time a change is made in the number of measuring devices connected to the totalizer. In some embodiments of the totalizer provision is made for subtracting signals from selected measuring devices and for preventing loss of count under several circumstances, such as a momentary loss of power.

3,812,386
PULSE CHARGE TO VOLTAGE CONVERTER

David Charles Porter, Dorchester, England, assignor to Integrated Photomatrix Limited

Filed Oct. 11, 1972, Ser. No. 296,587
Claims priority, application Great Britain, Oct. 29, 1971, 50396/71
Int. Cl. H03k 5/00
U.S. Cl. 307—261 4 Claims



Apparatus for converting a sequence of electrical current pulses into a sequence of steady voltage levels having magnitudes significant of the charge content of the respective pulses includes an integrator for receiving the current pulses, via an input amplifier and one input of an adding network, and operative to perform integration of each pulse over its duration. A first follow and hold circuit is connected to the output of the integrator via a first gate circuit and is operative to follow the integrator output and hold the steady voltage level at the completion of the integration of a pulse. The output of the first follow and hold circuit is connected via a second gate cir-

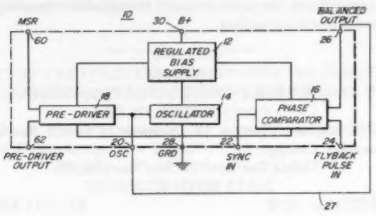
cuit to a second follow and hold circuit for delivering the steady voltage corresponding to each current pulse until another voltage level corresponding to a succeeding current pulse is received from the first follow and hold circuit. The output of the first follow and hold circuit is also connected to a second input of the adding network via a third gate circuit to feed to the integrator simultaneously with the integration of a pulse a reset signal proportional to the steady voltage level corresponding to the integrated value of the preceding current pulse.

3,812,387

MONOLITHIC HORIZONTAL PROCESSING CIRCUIT WITH SELECTABLE DUTY CYCLE

Milton E. Wilcox, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 24, 1972, Ser. No. 256,523
Int. Cl. H03k *1/18*
U.S. Cl. 307—265 **9 Claims**



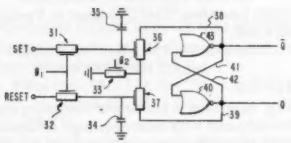
A horizontal processing circuit in monolithic integrated circuit form for a television receiver, which processing circuit includes a horizontal oscillator, phase comparator, and predriver stage. The oscillator generates a sawtooth signal at approximately the desired frequency as determined by an external RC timing network, and which is locked in phase and frequency to the received television signal by the actions of the phase comparator. The sawtooth signal is applied to the predriver stage which includes an electronic switch which produces an output pulse of essentially square wave configuration. By controlling the setting of the switching threshold of the electronic switch, the width of the output pulse may be effectively controlled within a predetermined range or ratio such that the horizontal processing circuit may be rendered fully compatible within any horizontal sweep system whatever the design factors may be.

3,812,388

SYNCHRONIZED STATIC MOSFET LATCH

Richard Alvin Southworth, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1972, Ser. No. 293,191
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **4 Claims**



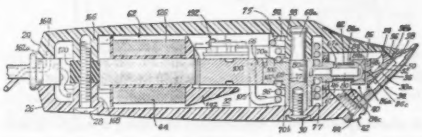
A hybrid master/slave device latch including a dynamic input stage is operable under a two-phase clock and set and reset inputs to set or reset a static output stage. If a latch is implemented in MOSFET logic to operate in the purely dynamic mode and the latch is not refreshed at, for instance, the rate of 10 kHz, a malfunction may occur due to the leakage of charges from temporary storage capacitors. With this dynamic type of latch, due to the relatively high refresh frequencies required, extreme difficulty is encountered in testing. While a static type of device can be operated at extremely low or zero frequencies and thus can be readily tested, it requires more MOSFET devices. The subject invention combines the attributes of the fewer number of components required in a dynamic latch with the memory ability of a static latch in a particular implementation such that there are fewer MOSFET devices required than would be required in either a purely static or dynamic latch.

3,812,389

HAIR CLIPPER WITH IMPROVED BLADE DRIVING MEANS

Leonard E. Bowerman, Fairfield, Conn., assignor to Oster Corporation, Milwaukee, Wis.

Filed Nov. 10, 1972, Ser. No. 305,276
Int. Cl. H02k *7/08*
U.S. Cl. 310—50 **21 Claims**



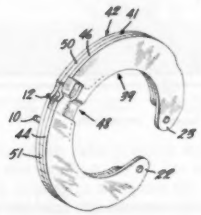
A hair clipper having a vibratory motor with an armature that is pivotally supported by an upright bearing is disclosed. A pair of torsion springs encircle the vertical axis of the bearing. One end of each spring is inserted into apertures in the armature and the other end of each spring bears against the housing of the clipper to bias the armature to a central position. The blade drive pin is integrally molded into the armature and a plastic ball and socket drive member is carried by the pin. The drive member is spring biased against a plastic drive shoe, which is removably secured to the upper cutting blade of the clipper. The drive shoe and the housing of the clipper have mating guiding surfaces.

3,812,390

ALTERNATOR RECTIFIER

John G. Richards, Millburn, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed July 13, 1973, Ser. No. 378,866
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 D **4 Claims**

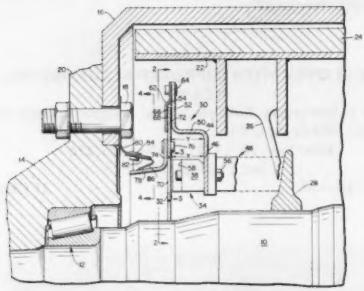


An improved rectifier for alternators, especially motor vehicle alternators, is disclosed. The rectifier is characterized by its strength, its heat sink functionability, low cost assembly and ability to replace defective diodes.

3,812,391
WHEEL SPEED SENSOR

James D. Johnson, Dearborn, and Alan T. Maytum, Sterling Heights, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 16, 1972, Ser. No. 263,688
Int. Cl. H02k 19/24
U.S. Cl. 310—168 10 Claims

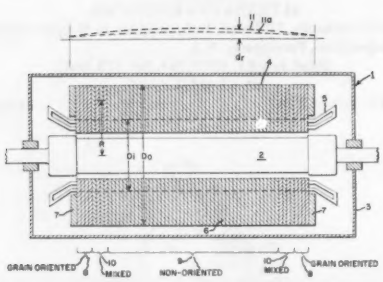


A wheel speed sensor mechanism including a magnetic sensor stationarily mounted on a vehicle axle, a rotor drive means for rotating the rotor with the wheel, and common mounting and support means carried by the vehicle axle for supporting the rotor and sensor in a predetermined relation.

3,812,392
COMPOSITE ARMATURE CORE FOR DYNAMOELECTRIC MACHINE

Sterling C. Barton, and Nickolas Schmitt, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,580
Int. Cl. H02k 1/12
U.S. Cl. 310—259 3 Claims

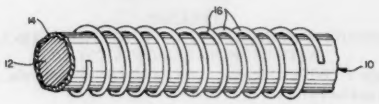


In a laminated dynamoelectric machine armature core, grain-oriented material is used in the end sections and non-oriented material with a higher effective modulus of elasticity is used in the midsection. This permits reductions in radial vibrational deflections at the core midsection or alternatively permits reductions in overall core diameter without increasing vibrational deflections at the midsection.

3,812,393
REDUCED IMPURITY FILAMENT FOR ELECTRIC LAMPS

Ronald C. Koo, Weehawken, and Joel Shurgan, Washington Township. Bergen County, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Continuation-in-part of Ser. No. 66,275, Aug. 24, 1970, Pat. No. 3,662,789. This application Feb. 4, 1972, Ser. No. 223,607
Int. Cl. H01k 1/08
U.S. Cl. 313—344 1 Claim

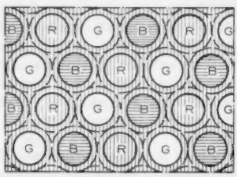


An annealed tungsten filament wire for electric lamps having substantially the same amounts of impurities therein as was present prior to annealing.

3,812,394
IMAGE SCREEN WITH SINGLE, OPTICALLY CONTINUOUS FILTER

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 6, 1971, Ser. No. 186,886
Int. Cl. H01j 29/30, 29/28
U.S. Cl. 313—92 B 8 Claims



The screen of a shadow-mask tri-color picture tube has a series of optically continuous red filters not only covering screen areas assigned to red but also extending into abutting relation with screen areas assigned to blue and green. These latter areas have deposits of the appropriate color phosphor but the blue phosphor is pigmented.

Another embodiment features a generally similar application of filter characteristics to the red and blue phosphor deposits of a black-surround tube further to improve brightness by enlarging the phosphor deposits and, at the same time, improving screen anti-reflectance.

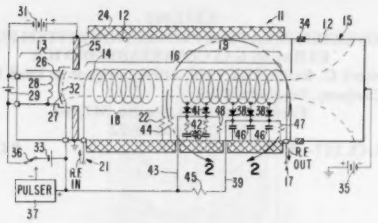
3,812,395
DUAL MODE TWT FOR LOW POWER CW AND HIGH POWER PULSED OPERATION

Allan W. Scott, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 20, 1973, Ser. No. 333,834
Int. Cl. H01j 25/34
U.S. Cl. 315—3.6 16 Claims

A traveling wave tube is capable of operating over relatively wide bandwidths and with relatively high efficiency at one or the other of two different power output levels which are separated by as much as 10 db. The tube is switchable from one mode of operation to the other in a relatively short period of time, as of a few nanoseconds, by means of a control grid. In switching from the low power C.W. mode to the high power pulsed mode, the beam current is increased by a value of several times, as of five; the effective length of the output sec-

tion of the slow wave circuit is automatically decreased; and the phase velocity on the output section of the slow wave circuit is decreased to maintain synchronism with the slow space charge wave of the beam.

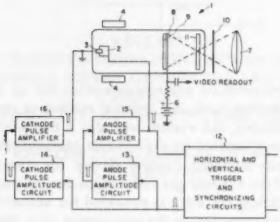


3,812,396

CIRCUIT ARRANGEMENT FOR PRODUCING PEDESTAL CURRENT IN A PYROELECTRIC THERMO IMAGING TUBE

Merton H. Crowell, Mahopac, N.Y., assignor to North American Philips Corp., New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,832
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 **8 Claims**



A pyroelectric thermo imaging tube employing an external circuit arrangement for the variable pulsing of the cathode during horizontal flyback periods that are not coincidental with vertical flyback periods to remove residual charges as well as opposite polarity charges and potentials generated on the non-conducting side of the pyroelectric target. Pulsing of the cathode provides secondary electron emission which produces a pedestal current that can be employed for the direct read-out from the target.

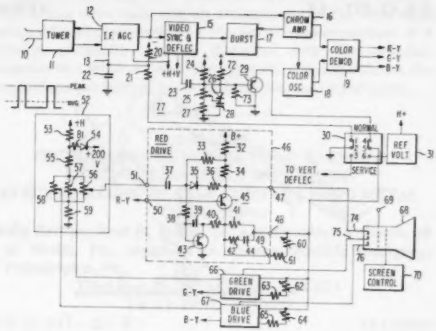
3,812,397

INDEPENDENT ELECTRON GUN BIAS CONTROL

James Courtland Marsh, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,685
Int. Cl. H01j *29/70*
U.S. Cl. 315—31 TV **4 Claims**

Apparatus for independently controlling the cutoff of electron beam current in each of a plurality of electron guns in a color kinescope. The bias voltage that is applied to the cathode of each gun is dependent upon the peak-to-average value of separate controllable pulses supplied to each of the drive circuits of the respective cathodes. The pulse control circuits are operable to provide independent control of the kinescope bias voltage without otherwise affecting operation of the cathode drive circuits. The above apparatus is adjusted during the initial set up of the cut-off biasing potential of the cathodes of the kinescope to insure correct color balance of the guns; that is, to insure that current from each of the cathodes is cutoff at the same time during black or blanking signals and that simultaneous cut-off of all cathodes is relatively independent of fluctuations in line voltage.

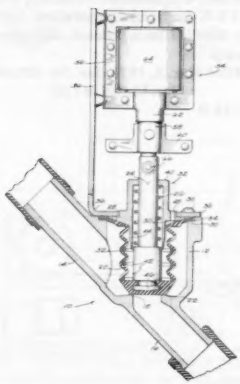


3,812,398

DRAIN VALVE

James A. Kozel, Elmhurst, and Edwin A. Ostrowski, Mount Prospect, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Nov. 10, 1972, Ser. No. 305,365
Int. Cl. F16k *31/08*
U.S. Cl. 251—331 **1 Claim**

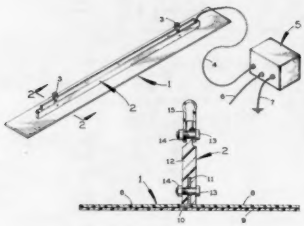


The dishwasher drain valve provides straight through flow with the valve seat at about 45° to the flow to provide increased velocity tending to straighten the flow of elongated objects (toothpicks, etc.) and decrease chances of such debris becoming lodged in the valve housing. A bellows seals the stem and solenoid from contact with liquids and entrained contaminants. The end of the bellows functions as the valve. Collapse of the bellows onto the stem is prevented by stiffening rings. The stem is guided for linear movement and tolerates some degree of misalignment with the solenoid.

3,812,399
ELECTROSTATIC FOR DEIONIZING AIR AND OTHER GASES

Chester D. Slocum, Jr., 9860 S.W. 40th St., Miami, Fla.

Filed Dec. 19, 1972, Ser. No. 316,575
Int. Cl. H05f 3/04
U.S. Cl. 317—2 F 4 Claims

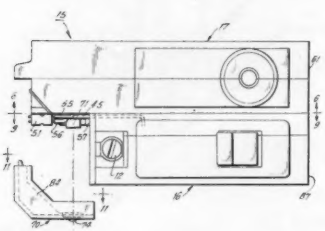


An electrostatic electrode adapted to be energized by high voltage consisting of a pair of quasi conductive plastic laminates in superposed relation and having relatively poor electric conductivity and insulation. A right angled sheet metal member positioned through a central linear slot of predetermined length with one side thereof sandwiched between said laminates. The upturned portion of the metal member is covered on all sides by insulation. A pair of spaced suspension hangers are secured to the plastic insulation and an insulated conductor is connected to one end of said metal member for conducting high voltage thereto.

3,812,400
MODULAR GROUND FAULT INTERRUPTER

Carl E. Gryctko, Haddon Heights, N.J.; Paul Muchnick, Norwald, and Frank C. Jaconette, Trumbell, both of Conn., assignors to I-T-E Imperial Corporation, Spring House, Pa. and Harvey Hubbell Incorporated, Bridgeport, Conn., part interest to each

Filed Mar. 5, 1973, Ser. No. 338,405
Int. Cl. H02h 1/02
U.S. Cl. 317—18 D 10 Claims

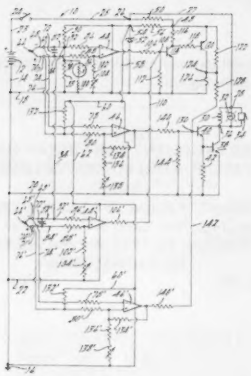


A circuit breaker module and a sensor module are secured together side by side to form a ground fault interrupter, with all moving parts of the interrupter being contained within the housing of the circuit breaker module. The modules are electrically connected at an interface region disposed outside of the module housings. This interface region is enclosed by a cover that cooperates with portions of the sensor module housing to form a plurality of compartments each of which contains a different electrical splicing element.

3,812,401
OVERTEMPERATURE PROTECTION SYSTEM FOR EXHAUST GAS CONVERSION DEVICE

Bernard G. Radin, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 4, 1973, Ser. No. 347,961
Int. Cl. G05d 23/22
U.S. Cl. 317—40 R 8 Claims



An overtemperature protection system for an exhaust gas conversion device, such as a thermal reactor or catalytic converter. Preferably, the system includes a thermocouple temperature sensor located on the exhaust gas conversion device, an electrically-actuated control device for diminishing the operation of the exhaust gas conversion device, and a warning device. Electrical circuitry is provided for actuating the control device in response to the attainment of a first predetermined temperature sensed by the temperature sensor. A warning device may also be actuated at this first predetermined temperature. Additional electrical circuitry provides retained actuation of the control means and warning devices upon the occurrence of a second predetermined temperature sensed by the temperature sensor, the second predetermined temperature being higher than the first predetermined temperature. The thermocouple reference junction is compensated for ambient temperature and electrical circuitry is provided for actuating the control and warning devices upon the occurrence of an open circuit at the temperature-sensing junction of the thermocouple.

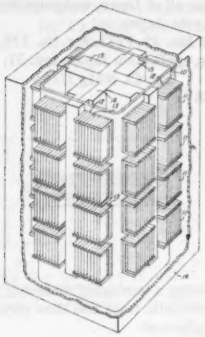
3,812,402
HIGH DENSITY DIGITAL SYSTEMS AND THEIR METHOD OF FABRICATION WITH LIQUID COOLING FOR SEMI-CONDUCTOR CIRCUIT CHIPS

Emory C. Garth, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1972, Ser. No. 316,203
Int. Cl. H05k 7/20
U.S. Cl. 317—100 25 Claims

High density interconnection and packaging is provided for complex digital systems such as computer systems in which unpackaged integrated logic and arithmetic elements are

mounted in high density directly on logic cards. The logic cards are stacked in high density on multi-layer interconnection boards providing interconnection between the logic cards



and providing the necessary operating power. One or more of the multi-layer interconnection boards having the logic cards mounted thereon are then packaged in a liquid cooling system.

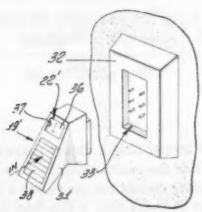
ERRATUM

For Class 317—101 see:
Patent No. 3,812,381

3,812,403
ELECTRONIC COMBINATION LOCK INCLUDING SEQUENTIAL SIGNAL GENERATOR AND SIGNAL DISPLAY

Klaus W. Gartner, 5711 Ravenspur Dr., Palos Verdes Peninsula, Calif.

Filed June 29, 1972, Ser. No. 267,640
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 **22 Claims**

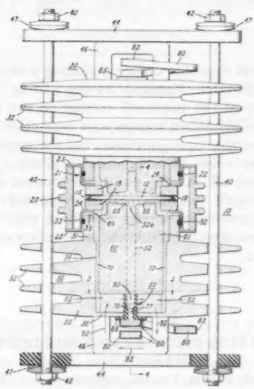


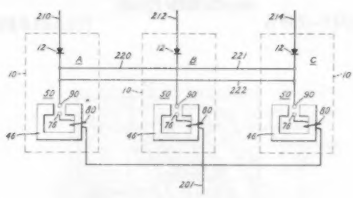
A manually-actuated electronic combination lock is provided in which the combination code consists of certain preselected digital signals out of a field of many such signals. Circuit means provide for generating a sequence of digital signals constituting the field in response to sustained manual engagement with a push-button switch and a solid state alphanumeric indicator is connected to display by symbolic representation each of the signals as generated. Selection of the proper combination of signals is provided by manually releasing the switch as each of the proper signals is displayed, whereupon each such selected signal is f ed to a decoding circuit. The signals selected in this manner are collected in the decoding circuit, which upon completion of the proper code operates an electromagnetic lock or the like. In one embodiment of the invention, the solid state indicator is mounted together with the push-button switch on a portable key member adapted for a detachable connection at a security station, such as a door equipped with an electrically-operated lock. Other disclosed embodiments include, mounting of the solid state indicator and manual push-button within a door handle disposed adjacent to and for operation of an electromechanical door lock; and an arrangement of the solid state indicator and push-button in the driver's compartment of a vehicle, preferably and as disclosed with the indicator disposed in a window panel overlying the steering column, for controlled operation of the vehicle ignition and hood locks.

3,812,404
INCREASING THE INITIAL FLOW RATE IN A RECTIFIER ASSEMBLY EMPLOYING ELECTROMAGNETICALLY-PUMPED LIQUID METAL FOR COOLING

Philip Barkan; Fred W. Kelley, Jr., and Theodore A. Shook, all of Media, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed May 29, 1973, Ser. No. 364,811
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **18 Claims**



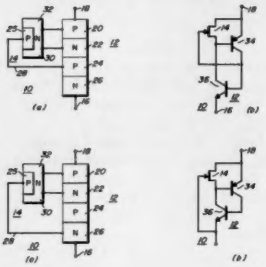


In each phase conductor of a polyphase rectifier system, there is a periodically-conducting rectifier assembly of the type comprising a semiconductor body and a cooling system for the body. The cooling system comprises a fluid circuit containing liquid metal and electromagnetic pumping means for forcing liquid metal through the fluid circuit. The electromagnetic pumping means comprises coil means, at least a portion of which is electrically connected in series with said semiconductor body. Means is provided for electrically connecting the coil means of the rectifier assemblies in circuit in such a way that when the rectifier assembly in any one phase conductor is blocking current therethrough, at least a portion of the coil means of said blocking rectifier assembly is energized by current passing through another of said phase conductors.

3,812,405
STABLE THYRISTOR DEVICE

Lowell Eugene Clark, Scottsdale, Ariz., assignor to Motorola, Inc., Phoenix, Ariz.

Filed Jan. 29, 1973, Ser. No. 327,366
Int. Cl. H01l 11/10
U.S. Cl. 317—235 AB 7 Claims

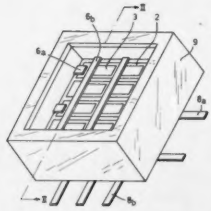


A two-terminal thyristor device including a thyristor combined with a field effect transistor having a firing voltage that is dependent upon the pinch-off voltage of the field effect transistor. The field effect transistor is connected to reverse bias the PNP emitter-base junction until the applied voltage increases to the value at which the field effect transistor becomes pinched off. At this point the product of the PNP gain and NPN gain is greater than unity, and the device switches to a conducting mode. The field effect transistor establishes the holding current in the conduction mode for the switching device.

3,812,406
LIGHT EMITTING DIODE DEVICE FOR DISPLAYING CHARACTERS

Dominique Henri, Epron, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 170,144, Aug. 9, 1971, abandoned.
This application June 20, 1973, Ser. No. 371,718
Int. Cl. H01l 15/00
U.S. Cl. 317—235 N 5 Claims



A light emitting diode display apparatus where a light emitting diode junction is formed on the surface of a semiconductor crystal. Metallized contact faces are formed on the surface of the crystal in direct contact with metal connection surfaces on a transparent insulating support layer to which the crystal is secured.

3,812,407
CAPACITOR

Kiyoo Nose, Kusatsu; Yoshiji Kokura, Akasaki; Nobuo Hizaki, Kusatsu; Shigeyoshi Nishikawa, Minakuchi, and Yoshihiki Shinbo, Kusatsu, all of Japan, assignors to Nichicon Capacitor, Limited, Kyoto, Japan

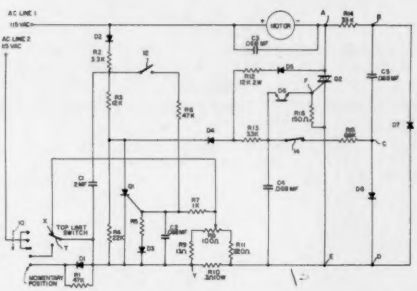
Filed Jan. 29, 1973, Ser. No. 327,723
Claims priority, application Japan, Jan. 31, 1972, 47-11108
Int. Cl. H01g 3/195
U.S. Cl. 317—258 2 Claims

A capacitor having a laminated dielectric formed of layers of paper and a synthetic resin and then impregnated with an aromatic hydrocarbon oil.

3,812,408
TRASH MASHER MOTOR CONTROL

Paul E. Penn, and John Waymire, both of Indianapolis, Ind., assignors to Dart Control, Inc., Indianapolis, Ind.

Filed May 14, 1973, Ser. No. 359,656
Int. Cl. H02p 7/28
U.S. Cl. 318—282 8 Claims

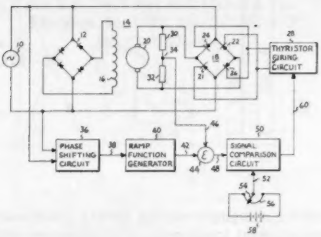


A system for controlling a direct current reversible motor comprising a Triac for controlling the flow of current through the motor, a gating circuit for providing a forward gating current to the gate of the Triac, a flip-flop for drawing the forward gating current away from the gate when the flip-flop is conductive, a control for rendering the flip-flop conductive, and a slaving circuit for drawing current out of the Triac gate when current flow in the forward direction through the Triac is clocked. The slaving circuit includes a resistor-capacitor network connected between the anode of the Triac and its gate such that a charge is built up on the capacitor by a positive current cycle on the anode when the Triac is non-conductive in the forward direction to be discharged by current flow away from the gate when the subsequent negative cycle appears on the anode. The slaving circuit also includes diodes for directing current flow from the gate during discharge of the capacitor. The control for rendering the flip-flop conductive includes a network for sensing the level of current flowing through the motor and providing a control voltage proportional to the current, the flip-flop being rendered conductive when the control voltage reaches a predetermined level.

3,812,409
CURRENT LIMIT CIRCUIT FOR A DC MOTOR

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 6, 1973, Ser. No. 338,616
Int. Cl. H02p 5/16
U.S. Cl. 318—310 19 Claims

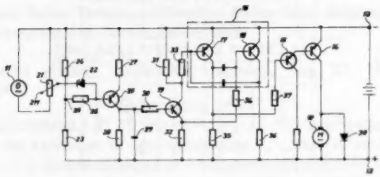


A direct current motor control circuit of the type employing "phase controlled" semiconductors of the controlled rectifier type is provided with a current limiting function which serves to predict and limit the amount of current which will be applied to the motor. A full wave controlled rectifier bridge supplies power to the motor armature winding from an alternating current source and suitable control circuitry is provided which limits the percentage of time (i.e., phase control) during which the controlled rectifiers of the bridge are conductive to hence limit the armature current in a predictive manner to prevent excessive current within the motor armature circuit.

3,812,410
CIRCUIT FOR REGULATING THE SPEED OF A DIRECT CURRENT MOTOR

Gerhard Schaub, and Karl Schramm, both of Nurnberg, Germany, assignors to Gebr. Buhler Nachfolger GmbH, Nurnberg, Germany

Filed Dec. 28, 1970, Ser. No. 102,010
Claims priority, application Germany, Jan. 7, 1970, 2000497
Int. Cl. H02p 5/00
U.S. Cl. 318—328 8 Claims

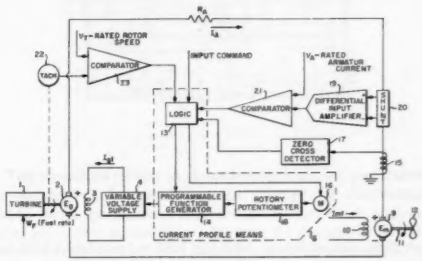


The ratio between the two states of an astable multivibrator is varied in dependence on the difference between a reference voltage and the output of an alternating current generator driven by the motor, a speed of which is to be regulated. One output of the multivibrator is connected to control the conductivity of a power transistor that controls the flow of current to the motor.

3,812,411
DYNAMIC BRAKING OF A GAS TURBINE POWERED SHIP PROPULSION SYSTEM UTILIZING A D. C. ELECTRIC DRIVE

Roy D. Johnson, Annapolis, and Casimer Joseph Rubis, Davidsonville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1973, Ser. No. 333,929
Int. Cl. H02p 3/14
U.S. Cl. 318—376 11 Claims

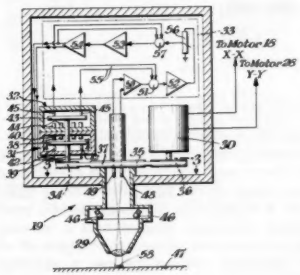


Dynamic braking of a ship's propeller powered by a turboelectric drive system is achieved by dissipating the rotational energy of the propeller through the windage loss of the gas turbine rotor. Braking torque on the propeller is maximized by controlling the generator field current according to a predetermined profile so as to maximize armature braking current without exceeding rated armature current or rated rotor speed.

3,812,412
PHOTOELECTRIC SCANNING DEVICE FOR FLAME CUTTING MACHINES

Gunter Hahn, Hausen, and Gunther Hannappel, Frankfurt, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 801,506, Feb. 24, 1969, abandoned. This application Nov. 9, 1971, Ser. No. 196,907
Int. Cl. G05b 19/36
U.S. Cl. 318—577 3 Claims

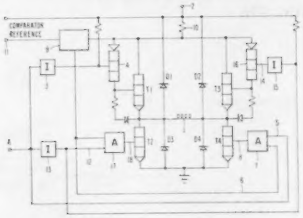


A photoelectric scanning device for flame cutting machines includes a disc rotor motor as the driving motor for the scanning shaft and a disc rotor motor as the generator for producing the damping voltage.

3,812,413
DRIVE CIRCUIT FOR INDUCTIVE LOAD

Steven Dennis Keidl, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,095
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 **4 Claims**



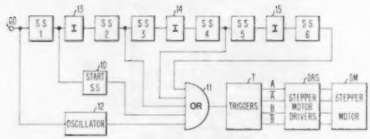
A drive circuit for an inductive load is described which has particular use for stepping motors. A high voltage power supply is connected through a very low impedance directly to the inductive load to provide a fast rise time for the load current. When the current exceeds a predetermined value, the load is disconnected from the power supply. The current induced in the load due to flux decay is permitted to circulate through the load and a current sampling circuit. When the induced current drops below a minimum value, the load is again connected to the power supply for a period sufficiently long to allow restoration of the load current to the desired value.

The circuit utilizes two switches to control the flow of induced current and connection of the load to the power supply. Both switches respond to a logic signal indicating that the load is to be energized. One switch is used to control the induced current and the other is used to make the connection to the power supply.

3,812,414
STEPPER MOTOR CONTROL SYSTEM USING PULSE INJECTION FOR VELOCITY OVERSHOOT CONTROL

Dennis G. Abraham, Vestal, and Ray A. McSparran, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,297
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **5 Claims**

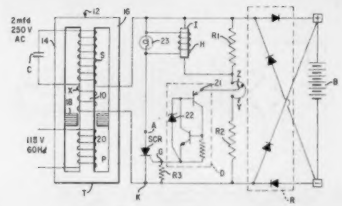


Starting control of a stepper motor having an open-loop oscillator control is obtained by utilizing a pulse injection arrangement whereby a plurality of pulses are supplied in rapid succession at the proper time to the drive circuits for the stepper motor giving a negative torque to the motor which prevents an overshoot in velocity.

3,812,415
FERRORESONANT BATTERY CHARGER CIRCUIT

Burrows Corson Van Gilder, North Wales, and Elmo Emerson Moyer, Pennsburg, both of Pa., assignors to ELTRA Corporation, Toledo, Ohio

Filed Sept. 27, 1972, Ser. No. 292,644
Int. Cl. H02j *7/04*
U.S. Cl. 320—31 **12 Claims**

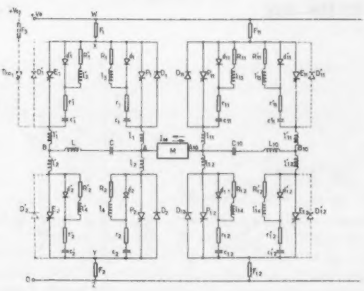


A circuit for charging a storage battery is disclosed which uses a ferroresonant transformer in combination with a full-wave rectifier to supply direct current to charge the battery. The charging current is controlled by a single silicon controlled rectifier connected to substantially short circuit either all or a portion of one secondary winding of the transformer during increasing portions of half cycles of one polarity as the battery becomes charged. A voltage divider applies a preselected portion of the alternating current transformer output voltage, which is essentially the battery voltage, to gate the controlled rectifier. This preselected voltage is modified by the resistance varying characteristics of a thermistor which is responsive to heat produced by current through the controlled rectifier when it is conducting to reduce the current supplied to the battery. A lamp may be provided to visually indicate when the battery is charged.

3,812,416
FORCED COMMUTATION INVERTORS

Michel Lalande, Le Vesinet, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed July 27, 1972, Ser. No. 275,497
Claims priority, application France, July 28, 1971, 71.27745
Int. Cl. H02m *7/52*
U.S. Cl. 321—45 R **4 Claims**



The invention relates to a D.C. to A.C. convertor, i.e., an invertor, including at least two pairs of main thyristors, at least two pairs of cut-off thyristors, means to effect triggering of the thyristors in accordance with a predetermined cycle, an oscillatory reversal circuit comprising an inductor and a capacitor connected in series between the common point of the main thyristors and the common point of the cut-off thyristors,

booster diodes associated with the main thyristors, auxiliary inductors to protect the thyristors against rapid current and voltage variations, and supplementary circuits for protection against transitory states of current and voltage, connected in parallel with the thyristors, the auxiliary protective inductors, connected in series with the thyristors, forming part, not of the sections of the circuit in parallel with the booster diodes, but of the oscillatory reversal circuit.

3,812,417

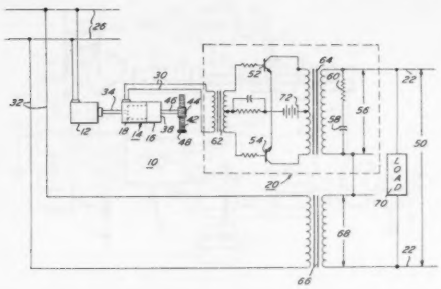
VOLTAGE REGULATING SYSTEM

Laurence Keltz, R.D. No. 1 Box 466, Malvern, Pa.

Filed Nov. 16, 1972, Ser. No. 307,073

Int. Cl. H02p *9/02*

U.S. Cl. 322—55 **5 Claims**



A voltage regulating system for producing a resultant voltage vector of predetermined magnitude and phase relation with respect to an incoming source signal. The regulating system includes a motor mechanism which is driven from an AC source signal having a reference phase angle. The motor is mechanically connected to a generator which comprises both a stator and a rotor which is rotatably secured to the motor mechanism to produce a generator output signal. There is included a mechanism for mechanically rotating the stator with respect to the rotor to produce the generator output signal which has a predetermined phase angle value with respect to the source signal reference phase angle value. The generator mechanism may be electrically connected to an inverter circuit to produce an inverter signal which when combined with a source output signal across a load results in a resultant voltage signal dependent upon the predetermined rotation of the stator with respect to the rotor of the generator mechanism.

3,812,418

DEVICE FOR THE EXCITATION OF SPIN RESONANCES BY MEANS OF AN RF SIGNAL HAVING A PRESCRIBED AMPLITUDE FUNCTION

Werner Heinz Tschopp, Fallanden, Switzerland, assignor to Spectrospin AG, Zurich, Switzerland

Filed July 13, 1971, Ser. No. 162,141

Claims priority, application Germany, Nov. 27, 1970, 2058447

Int. Cl. G01n *27/78*

U.S. Cl. 324—0.5 R **4 Claims**

In the excitation of spin resonances by means of an RF-pulse in a sample arranged in a homogeneous magnetic field for purposes of spin resonance spectrometry, a limitation of the energy of excitation to the frequency range of interest and an essentially constant amplitude of the energy of excitation in that range of frequency is achieved by application of an RF-pulse with an amplitude variable in time which, at least approximately, corresponds to a sine x/x function. Such amplitude function can be generated by a modulation unit which is controlled either by a digital computer with a stored amplitude function or by the output signal of an analog computer solving a suitable differential equation.

3,812,419

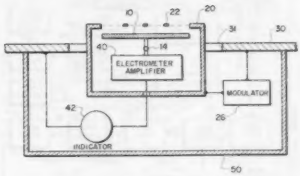
ELECTRONIC FIELD MILL

Helmuth M. Kaunzinger, Neptune, and Rudolf G. Buser, Wall, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 5, 1973, Ser. No. 337,794

Int. Cl. G01r *5/28*

U.S. Cl. 324—32 **5 Claims**



This invention relates to electrostatic fields and particularly to instruments for measuring the strength of electrostatic fields. More particularly this disclosure describes a device using electronic means for modulating the strength of an electrostatic field in front of a sensing electrode to simulate the field-mill effect and produce alternating voltage components resulting in an average voltage shift proportional to the field strength at that point. This average voltage shift is amplified and applied to a suitable means to indicate the relative field strength.

3,812,420

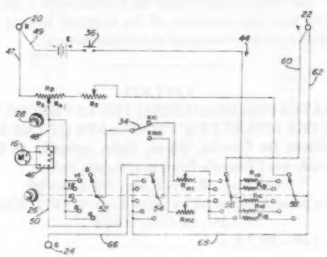
BRIDGE CIRCUIT CHANGING FAULT LOCATION METHOD AND DEVICE

Donald E. Gunter, Watson, La., assignor to General Industries, Inc., Denham Springs, La.

Filed Dec. 21, 1972, Ser. No. 317,213

Int. Cl. G01r *31/08*

U.S. Cl. 324—52 **16 Claims**

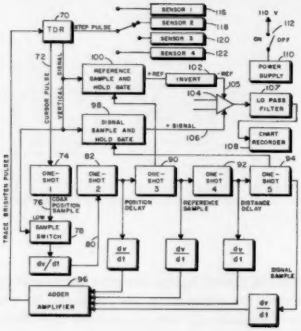


A device and method for locating faults in electrical conductors, said device comprising a bridge circuit adapted to be connected to operative and faulted conductors with a jumper connecting their remote ends, and switch means associated with the bridge circuit selectively movable to a first mode setting to provide a first balance condition reading corresponding to the length of the conductors and a second mode setting to provide a second balance condition reading representing a percentage of the first reading at which the fault is located from the device. A modified form of the device includes switch means with three mode settings to provide a single reading corresponding to the distance to the fault without computations. The device provides a convenient method for locating faults without necessarily knowing the size or resistivity of the operative conductor.

3,812,421
LIQUID COATING MEASURING APPARATUS

Gerard A. La Rocca, 901 Via Mirado, Palos Verdes Estates, Calif.

Filed Aug. 24, 1972, Ser. No. 283,577
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 B 17 Claims



Apparatus for measuring a liquid coating passing through a pair of hollow bars, tubes, or rods. The hollow tubes are electronically driven by a time domain reflectometer having appropriate apparatus therewith for sampling a coating having a dielectric constant which is measured to provide a general measurement of the coating. The measurement of the dielectric constant is then taken with respect to a reference such as the tubes or a temperature controlled cable.

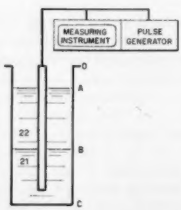
Specifically, the apparatus can be used for measuring the latex content of a carpet wherein the latex has been applied as a water and latex mixture and then passed between the respective sensor tubes providing a readout of the dielectric constant of the latex by means of a recorder as well as a cathode ray tube (CRT) display.

The apparatus employs a power supply, a plurality of one-shots to provide positioning delays, and reference sample locations. The entire device can be utilized with a plurality of stations so that the character of the material having a dielectric constant can be measured at various places.

3,812,422
APPARATUS FOR MEASURING THE LEVELS OF FLUIDS AND THE DIELECTRIC CONSTANTS OF THE SAME

Massimiliano De Carolis, Rome, Italy, assignor to Comitato Nazionale per l'Energia Nucleare, Rome, Italy

Filed Aug. 28, 1972, Ser. No. 283,980
Claims priority, application Italy, Sept. 4, 1971, 52680/71
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 B 4 Claims

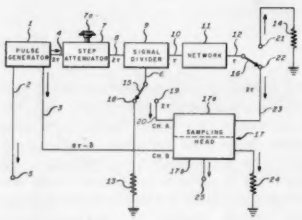


A device is herein disclosed for measuring the changes of impedance along the path of an electric signal. More specifically, according to this invention the changes of impedance along a coaxial cable connected to a pulse generator are measured and through such measures the distances are measured between a reference point along the cable and the points where the the changes of impedance occur. Particularly this invention relates to a device for accurately determining the interfaces level between liquid masses and the dielectric constants of said liquids.

3,812,423
NETWORK TIME DOMAIN MEASUREMENT SYSTEM

Harry M. Cronson, Lexington, and Peter G. Mitchell, Concord, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 16, 1973, Ser. No. 379,283
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A 9 Claims

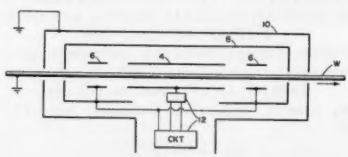


The forward and backward scattered energy of a high frequency network exposed to an incident base band impulse of electromagnetic energy in a transmission line is sampled by a compensation sampling system and the incident wave and reflected and transmitted response waves are employed in performing discrete Fourier transformations in a computation process yielding the complex characteristics of the network.

3,812,424
CAPACITIVE WIRE GAUGE

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 292,700, Sept. 27, 1972, Division of Ser. No. 64,240, Aug. 17, 1970, Pat. No. 3,706,919.
This application Mar. 15, 1973, Ser. No. 341,543
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 24 Claims



An apparatus and method for gauging the cross sectional configuration of a conductive wire at a ground potential where the wire is placed within or passed through a tubular insulator having a tubular sensing electrode thereon and a pair of end electrodes located adjacent opposite ends of the sensing electrode. The sensing and end electrodes are surrounded by a conductive guard and all the electrodes and the guard are energized by alternating electric current. Measuring the capacitance between the sensing electrode and the wire provides an indication of the wire's cross sectional configuration. The energized guard and a shield maintained at ground potential and surrounding the guard eliminate the effects of stray

environmental capacitance. The pair of end electrodes eliminate the fringe effects of the capacitive field at the ends of the sensing electrode.

3,812,425

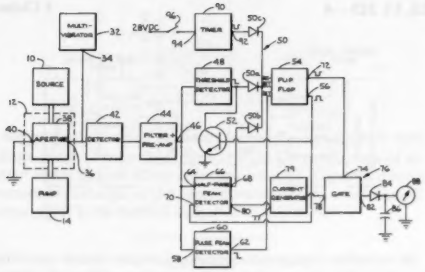
METHOD AND APPARATUS FOR DETERMINATION OF HEMATOCRIT

Jack Miller, Parsippany, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Nov. 21, 1972, Ser. No. 308,529

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 CP **15 Claims**



A diluted blood sample is passed through a blood cell sensor of the type that provides an electric pulse having a peak amplitude corresponding to the volume of each sensed blood cell and a pulse width corresponding to the instantaneous flow rate of the blood sample through the sensor. The pulse amplitude is monitored and when the pulse peak is sensed, a signal corresponding to the pulse peak amplitude is stored and provided to a gate. A predetermined portion of the pulse width is detected and a signal having a width corresponding to the predetermined portion of the pulse width is provided to control the gate so that the gate passes the signal corresponding to the pulse peak amplitude only during the predetermined portion of the pulse width. The signal passed by the gate is integrated during a specified count period to develop an analog signal corresponding to hematocrit.

3,812,426

METHOD AND APPARATUS TO TEST ELECTRONIC CIRCUIT ASSEMBLY SAMPLES

Ludwig Wilhelm Illian, Goethestrasse 2, Dortelweil, Germany

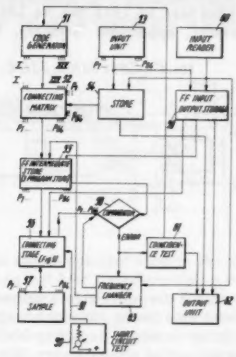
Filed Apr. 27, 1972, Ser. No. 247,969

Claims priority, application Germany, Apr. 30, 1971, 2121330

Int. Cl. G01r *15/12*

U.S. Cl. 324—73 R **23 Claims**

Electronic circuit assemblies having numbered terminals, some of which are input terminals and some are output terminals, are introduced into a test apparatus; a code combination of a predetermined program is applied to selected ones of the input terminals over an intermediate storage device and a connecting matrix. The outputs from at least some of the output terminals of the test sample are compared with outputs from a standard test sequence, or a sample of known quality, and an indication is obtained, upon non-coincidence, of the particular program step stored in the intermediate storage means which caused erroneous read-out. The input terminals are preferably grouped in groups of *n* terminals each, the connecting matrix permitting use of a code generator of a lesser number of outputs than the terminals of the sample. If the sample contains devices which may be in random states (such



as flip-flops, counters or the like) circuits may be provided to re-set the devices to a predetermined state to effect comparison.

3,812,427

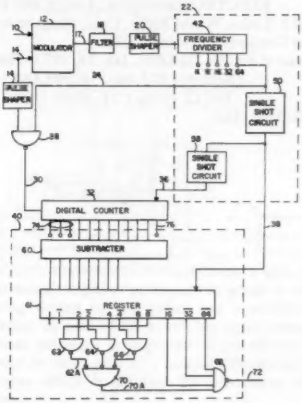
METHOD AND APPARATUS FOR MONITORING FREQUENCY

J. Roland Coulter, Harrison, N.Y., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,466

Int. Cl. G01r *23/14*

U.S. Cl. 324—79 D **19 Claims**



The frequency to be measured and a standard frequency are mixed to obtain a difference frequency and the cycle period of the difference frequency is used as a source of gating signals to gate a plurality of cycles of a standard frequency, the number of gated cycles being counted so that the count provides a measure of the reciprocal of the difference frequency which may be checked within desired limits as an indication of the accuracy of the input frequency.

3,812,428
METHOD OF AND APPARATUS FOR THE MEASURING OF DIRECT CURRENT

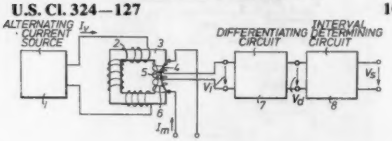
Gerhard Trenkler, Braunschweig, Germany, assignor to Licentia Patent-Verualtungs-GmbH, Frankfurt, Germany

Filed Mar. 14, 1972, Ser. No. 234,586

Claims priority, application Germany, Mar. 15, 1971, 2112315

Int. Cl. G01r *33/00, 33/02*

U.S. Cl. 324—127 **10 Claims**



An apparatus for the potential free measuring of direct current with direct time coding includes a magnetizable core. A premagnetization winding, a measuring winding and an induction winding are wound about the core. The direct current to be measured is fed to the measuring winding. The core can be placed in its saturated state at least partially by the periodically varying current flow in the premagnetization winding. An output voltage is developed by the induction winding as a result of the changing flux density in the core. A differentiating circuit is coupled to the induction winding for differentiating the output voltage thereof to produce a differentiated voltage. An interval determining circuit, operatively arranged to receive the differentiated voltage, determines the time intervals between the zero passages of the differentiated voltage as a measure of the magnitude and direction of the direct current. A method of measuring direct current is also described.

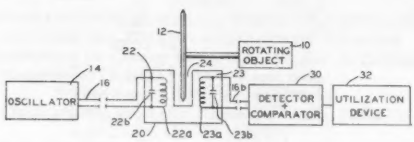
3,812,429
METHOD OF COMPENSATING FOR UNKNOWN LENGTH OF TRANSMISSION LINE IN ELECTROMAGNETIC TACHOMETER

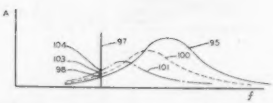
Ronald J. Lasky, Wheat Ridge, Colo., assignor to Stock Equipment Company, Cleveland, Ohio

Division of Ser. No. 220,091, Jan. 24, 1972. This application Sept. 4, 1973, Ser. No. 394,154

Int. Cl. G01p *3/54;* **H03h** *7/00*

U.S. Cl. 324—166 **3 Claims**





A tachometer system in which a carrier signal is transmitted to a speed sensing and transmission-line-length compensating device. Bursts of the carrier signal are relayed by the device to a detector and comparator circuit where a signal is recovered indicating the rate at which objects pass the speed sensing device. A method of compensating for differences in transmission line length in different systems by tuning the speed sensing device to a resonant frequency greater than the frequency of the carrier signal. Increased transmission line length causes the resonant frequency of the line including the device to approach the frequency of the carrier signal and improve the gain of the transmission line.

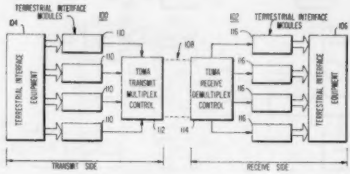
3,812,430
TDMA SATELLITE COMMUNICATIONS SYSTEM WITH IMPROVED ACQUISITION

William G. Schmidt, Rockville; Ova G. Gabbard, Germantown, both of Md.; John M. Husted, Vienna, Va.; Wilfrid G. Maillet, Oxon Hill, and Heinz H. Haeberle, Bethesda, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 11, 1971, Ser. No. 170,929

Int. Cl. H04b *7/20*

U.S. Cl. 325—4 **4 Claims**



In a satellite transponder communications system operating in a time division multiple access mode, each earth station transmits data in a burst format. All bursts within a single transponder frame are synchronized to a special reference burst which contains no data communications. A single earth station sends out the reference burst as well as its normal burst, and in the case of multi transponders and multi transponder frames, the single reference station sends out all of the reference bursts for the various transponder frames. Data to be transmitted may be received in many different forms and included within the same burst because of the modular arrangement of the earth stations. Individual terrestrial interface modules receive data in various forms, convert the data into bit form which is compatible with the TDMA system, store the converted bit stream and hold the block of data until a multiplexer requests the block of data for inclusion into the earth station's transmitted burst. The arrangement of blocks of data within a burst and the timing and duration of a burst is controlled by digital words stored in a memory. Complete reordering of burst times and the arrangement of blocks of data within a burst is accomplished by changing the words stored in the memory. A comparable system on the receive side of the earth station extracts blocks of data in selected bursts for conveyance to selected terrestrial interface modules.

Acquisition of the correct burst position is accomplished by sending out a low power signal and, adjusting its phase until it coincides with the proper received burst position. The low power signal is simply a square wave signal which is in phase with the start signal from the burst synchronizer.

3,812,431
DEVICE FOR COMPARING THE MAGNITUDES OF ELECTRICAL QUANTITIES

Peter William Fry, Dorchester, England, assignor to Integrated Photomatrix Limited, Dorchester, England

Filed July 25, 1972, Ser. No. 274,899

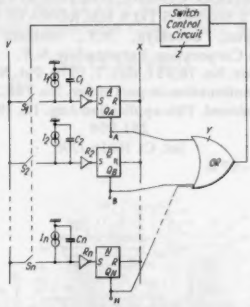
Claims priority, application Great Britain, July 26, 1971, 34983/71

Int. Cl. H04q *3/00*

U.S. Cl. 328—137 **5 Claims**

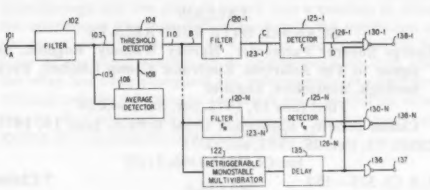
A device for comparing the magnitudes of a plurality of small currents such as photocurrents through photodiodes comprises capacitors which are arranged to be pre-charged from a voltage supply and then simultaneously discharged by

respective ones of the currents to be compared, whereby the voltage of each capacitor during discharge varies at a rate which is significant of the magnitude of the respective current. The voltage of each capacitor is detected by a bistable circuit



or trigger circuit which produces an output signal when such voltage drops to a predetermined value. On production of an output signal by one of the detection circuits, a control circuit operates to recharge all the capacitors to prevent a subsequent output signal from another detection circuit.

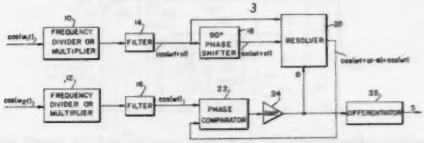
3,812,432
TONE DETECTOR
Robert Louis Hanson, Howell Township, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hills, N.J.
Filed Jan. 5, 1973, Ser. No. 321,211
Int. Cl. H03k 9/06
U.S. Cl. 328—138 **11 Claims**



Individual call progress and test tone signals are accurately detected by employing a threshold detector in conjunction with a frequency component detector. The threshold detector generates a substantially constant amplitude pulsating signal representative of intervals between prescribed levels of the instantaneous amplitude of an applied tone signal. Peak amplitudes of individual frequency components of the pulsating signal are detected and, then, compared with a predetermined reference. The frequency component having a peak amplitude greater than the reference corresponds to the fundamental frequency of the applied tone signal being detected.

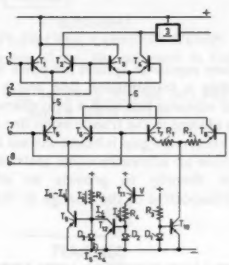
3,812,433
FREQUENCY DIFFERENCE MEASURING AND COMPENSATING CIRCUIT
Frank R. Bradley, 9 Dash Pl., Bronx, N.Y.
Filed May 9, 1973, Ser. No. 358,663
Int. Cl. H03b 3/04
U.S. Cl. 328—155 **3 Claims**

There is disclosed a circuit for measuring the frequency difference of two signals of the forms $\cos(wt+st)$ and $\cos(wt)$. A feedback signal θ is derived, and this feedback signal is operated upon together with the first input signal to derive a signal of the form $\cos(wt+st-\theta)$. This derived signal is compared to the second input signal in a phase comparator whose output is connected to the input of a high-gain amplifier. The amplifier output is the θ signal used in the first instance. Because of the employment of a high-gain amplifier in the loop, the output of the phase comparator is nulled. This, in



turn, forces the two signals operated upon by the phase comparator to be equal so that $\theta=st$. By differentiating the θ signal, the frequency difference s can be derived. The same "phase-chasing" technique can be employed not only to measure the frequency shift introduced by a transmission channel to a complex signal but also to compensate for that frequency shift and for phase intercept distortion as well.

3,812,434
INTEGRATED DIFFERENTIAL AMPLIFIER
Anthonius Johannes Josephus Cornelis Lommers, and Adrianus Joannes Maria Van Alphen, both of Emmasingel, Eindhoven, Netherlands
Filed Oct. 4, 1972, Ser. No. 294,913
Claims priority, application Netherlands, Oct. 9, 1971, 7113892
Int. Cl. H03f 3/42; H03g 3/30
U.S. Cl. 330—19 **11 Claims**

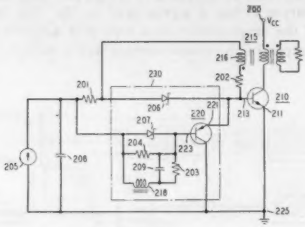


An integrated difference amplifier comprising a gain controlled first differential amplifier arrangement which is suitable for amplifying signals of low value and a satisfactory signal-to-noise ratio. In case of an increasing signal intensity the first differential amplifier arrangement is cut off and the signal amplification is taken over by a second differential amplifier arrangement which is suitable for processing large signal amplitudes.

3,812,435
PULSE WIDTH STABILIZED BLOCKING OSCILLATOR
Roman Ostapiak, Pine Brook, N.J., and Rudolph Scuderi, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 26, 1972, Ser. No. 318,089
Int. Cl. H03k 3/30
U.S. Cl. 331—112 **5 Claims**

A blocking oscillator includes a pulse width control circuit which diverts base current from the base drive of the blocking

oscillator transistor. This permits the blocking oscillator transistor to turn off and establish a predetermined pulse



width independently of its β characteristic and the supply voltage energizing the blocking oscillator.

3,812,436

WAVEFORM EQUALIZER SYSTEM

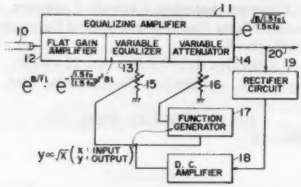
Isao Fudemoto, Tokyo; Shiegeki Kubota, Yokohama, and Tatsuki Hayashi, Kawasaki, all of Japan, assignors to Fijitsu Limited, Kawasaki, Japan

Filed Dec. 29, 1972, Ser. No. 319,942

Claims priority, application Japan, Dec. 31, 1971, 46-1844

Int. Cl. H04b *3/04*

U.S. Cl. 333—18 **7 Claims**



A waveform equalizer system for pulse repeating transmission, including a transmission line and a repeater inserted therein. The repeater has such a gain characteristic that, with respect to a change in the transmission line length, a peak amplitude of a received signal is held constant and its waveform is changed within an allowable value restricted by intersymbol interference, thereby to provide an effective equalized waveform irrespective of the change in the transmission line length.

3,812,437

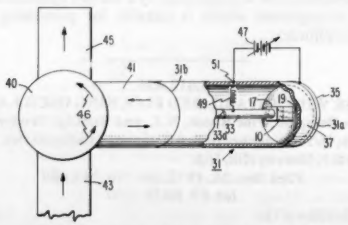
IMPEDANCE CONTROL USING TRANFERRED ELECTRON DEVICES

Richard Everet Marx, Jamesburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,769

Int. Cl. H01p *1/22*

U.S. Cl. 333—81 A **3 Claims**



A controllable impedance element is provided using a transferred electron device that is subcritically doped. The impedance can be used as a tunable attenuator or matching device by varying a suitable bias at the device terminals.

3,812,438

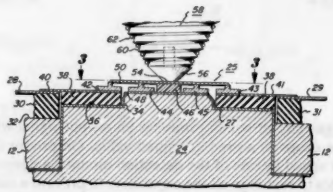
CONICAL SPIRAL CONDUCTOR FOR APPLYING LOW FREQUENCY SIGNALS TO A MICROWAVE STRUCTURE

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Division of Ser. No. 78,891, Oct. 7, 1970, Pat. No. 3,713,031, which is a continuation-in-part of Ser. No. 788,254, Dec. 31, 1968, abandoned. This application Aug. 18, 1972, Ser. No. 281,994

Int. Cl. H01p *1/00*

U.S. Cl. 333—97 R **27 Claims**



A microwave transmission system is formed by conically spiral resistive conductors that form broadband, reflectionless, non-absorbing connections. The conical spiral conductor serves as a single-wire transmission line having a high impedance to high-frequency signals over a broad band carried by an r-f transmission line and serves as an effective coupling to such an r-f line.

3,812,439

SCANNER WITH REED RELAYS

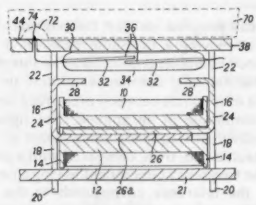
George Shearer Parmenter, Hartley Wintney, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed June 19, 1972, Ser. No. 264,038

Claims priority, application Great Britain, June 19, 1971, 28891/71; Dec. 28, 1971, 60262/71

Int. Cl. H01h *1/66, 51/00*

U.S. Cl. 335—151 **7 Claims**



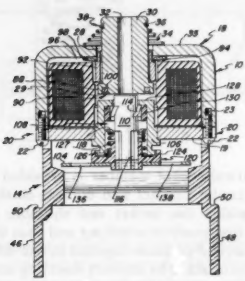
Electrical switching apparatus such as a scanner comprises a plurality of reed relays, each of which has an operating coil, and at least one reed contact unit which is mounted outside the coil, to reduce thermal E.M.F. generation. The reed contact units are mounted on a first printed circuit board, and control respective analogue signals passing through the printed circuit tracks of this first board, while the coils are mounted on, and respectively energised via the printed circuit tracks of, a second printed circuit board parallel to the first board. In this way, interference between the scanned analogue signals and the relay energising signals is reduced.

3,812,440

MECHANICALLY HELD LATCH ATTACHMENT FOR AN ELECTROMAGNETIC RELAY

David Langman Cook, Swindon, England, assignor to Square D Company, Park Ridge, Ill.

Filed Nov. 17, 1972, Ser. No. 307,746
Claims priority, application Great Britain, Nov. 19, 1971, 53731/71
Int. Cl. H01h 9/22
U.S. Cl. 335—167 8 Claims



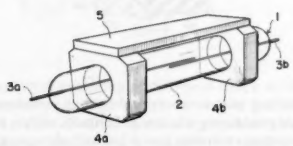
A latching attachment is provided for an electromagnetic relay. An insert for the relay movable contact carrier is employed in association with the latching attachment and the insert has at least one projection extending therefrom. The latching attachment includes a rotatable plate, mounted adjacent the insert projection and having an aperture therethrough and the plate is biased into a position in which the aperture is less than fully aligned with the projection on the insert, thereby preventing return of the contact carrier from its energized position to its de-energized position after the relay has been energized and subsequently de-energized. Manual and electromagnetic operators are provided for rotating the plate aperture into full alignment with the insert projection for releasing the relay contact carrier.

3,812,441

REED SWITCH MECHANISM MAKING USE OF HEAT-SENSITIVE FERRITE

Michio Sakamoto, and Masao Tanaka, both of Tokyo, Japan, assignors to Nippon Automation Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,747
Claims priority, application Japan, Dec. 3, 1971, 46-114418; Japan, May 6, 1972, 47-53383; Japan, Nov. 4, 1972, 47-127311
Int. Cl. H01h 37/68
U.S. Cl. 335—208 8 Claims



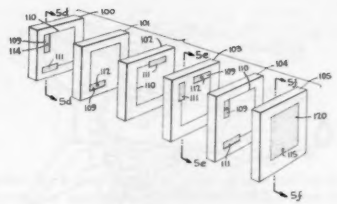
A temperature responsive switching device having at least one heat sensitive ferrite to determine the magnetic flux through a reed switch's contilevered contacts and to produce switching when the temperature passes through said ferrite's curie point.

3,812,442

CERAMIC INDUCTOR

William L. Muckelroy, P.O. Box 9685, Washington, D.C.

Filed Feb. 29, 1972, Ser. No. 230,247
Int. Cl. H01f 17/06
U.S. Cl. 336—83 3 Claims



A nonolithic microminiature inductor comprising a helical conductive path of deposited metal film immersed in a rectangular block of magnetic refractory material. The inductor has metal caps at each end of the block as terminations. These terminations may be soldered to metallized pads located on a substrate. A method for making this inductor wherein loops of conductive metal are deposited onto a thin unsintered magnetically permeable ceramic sheet with holes for interconnection therein and wherein said holes are alligned and said sheets are laminated such that upon sintering said metal forms a helical contiguous conductive path immersed a contiguous block of ceramic.

3,812,443

STAPLED COIL CONSTRUCTION

Charles E. Schroeder, Cary, Ill., assignor to Coilcraft, Inc., Cary, Ill.

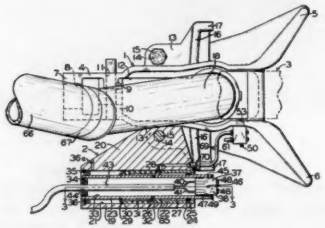
Filed May 24, 1973, Ser. No. 363,548
Int. Cl. H01f 15/10
U.S. Cl. 336—192 5 Claims

A coil assembly comprising a tubular coil form with a self-lead winding thereon, the leads of said winding extending axially beyond the end of the form, a sleeve telescopically inserted over the form and inside the leads at the end of lead extension, and staples securing the leads through the sleeve to the overlapped portion of the form, characterized by low cost and high versatility as to the pin circle described and the angular relation of the pins on the pin circle.

3,812,444
HOSE CONNECTOR HAVING MEANS FOR OPERATING ELECTRICAL CONTACTS

William H. Reno, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 17, 1972, Ser. No. 244,392
Int. Cl. H01r 3/04
U.S. Cl. 339—15 11 Claims

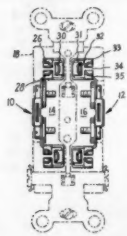


This invention relates to an automatic-type air hose connector for use on tandem-coupled vehicles. This hose connector has a mating head which is provided with a removable hose nipple, that has a hose coupling formed on one end, and a removable fluid-pressure-operated spring-released mechanism for effecting movement of a plurality of electrical contact elements into and out of circuit-closing relationship with corresponding contact elements carried by another automatic type air hose connector coupled thereto in response to the passage of fluid under pressure therethrough subsequent to the coupling of two alike automatic-type air hose connectors and thereafter the release of fluid under pressure therefrom upon the uncoupling of these air hose connectors.

3,812,445
BE-CU CONTACT FOR NEMA OUTLET

Joseph P. Stefani, Warwick, R.I., assignor to General Electric Company, Providence, R.I.

Continuation-in-part of Ser. No. 546,273, April 29, 1966, abandoned. This application Sept. 16, 1968, Ser. No. 871,415
Int. Cl. H01r 29/00
U.S. Cl. 339—32 R 1 Claim



A fingered electrical contact for a wiring device is provided to exert a high yieldable gripping force on an inserted power prong. The contact metal is a copper-beryllium alloy hardened to give the properties of spring steel.

3,812,446
ELECTRIC LAMP OR FUSE SOCKET

Richard A. Sinclair, Columbus, Ohio, assignor to James F. Cox, Xenia, Ohio, a part interst

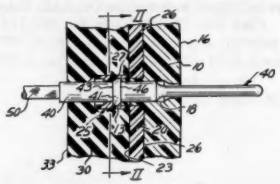
Filed July 10, 1972, Ser. No. 270,068
Int. Cl. H01r 13/44, 33/08, 33/54
U.S. Cl. 339—41 9 Claims

An electrical socket member is provided and includes an inner end center contact and contact shielding structure is mounted within the socket and shiftable laterally thereof between a first position overlying and thus shielding the contact and a second position disposed to one side of and thus exposing the contact. The contact shielding structure is spring-biased to the contact shielding position thereof and a centrally apertured abutment is mounted in the socket for inward and outward shifting therein and is operatively connected to the contact shielding structure for swinging the latter toward its contact exposing position in response to inward shifting of the abutment in the socket, the abutment being engageable by the base of a bulb being threaded into the socket for inward displacement of the abutment and thus shifting of the shielding structure to the contact-exposing position thereof as the bulb base approaches a fully seated position in the socket.

3,812,447
REAR RELEASE CONTACT RETENTION ASSEMBLY

Raymond J. Eifler, Farmington, Mich., and Walter F. Hennessey, Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 26, 1972, Ser. No. 318,341
Int. Cl. H01r 9/08
U.S. Cl. 339—59 R 5 Claims



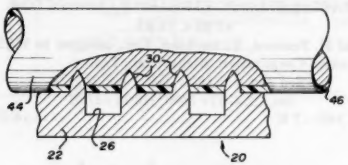
An electrical connector assembly that includes means for demountably retaining electrical contacts within the connector. The contact retention assembly includes a rearwardly extending tubular contact retention tower that is resiliently and radially expandable so that contacts may be demountably retained within the passage that extends through the contact retention tower. The rearwardly extending contact retention tower is cylindrically shaped with an axial passage therethrough containing a forwardly facing shoulder to provide a rearward stop when an electrical contact is mounted

therein. Another insert, having a hole therein, may be mounted around the tubular contact retention tower to prevent radial expansion thereof while the insert is in place.

3,812,448
ELECTRICAL CONNECTOR

Louis F. Haitmanek, Florham Park, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 24, 1972, Ser. No. 309,514
Int. Cl. H01r *11/20, 11/08*
U.S. Cl. 339—97 C **12 Claims**

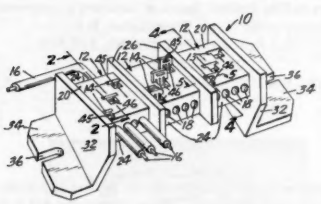


An electrical connector having an internal tooth structure and a selectively grooved conductor engaging inner surface therebetween providing reduced thickness web portions responsive to the expansion and contraction of an enclosed conductor to prevent relative movement at the interface between the conductor and the connector thereby maintaining secure mechanical and electrical contact therebetween under even extreme conditions of temperature cycling.

3,812,449
TERMINAL STRIP

Robert A. Elm, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1973, Ser. No. 355,455
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 **6 Claims**

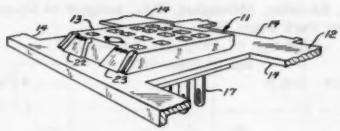


A terminal strip including an elongate block of electrically insulating material divided lengthwise into a plurality of terminal strip sections. Each terminal strip section has a plurality of wire receiving bores and a plurality of contact elements having spaced wire engaging fingers slidably mounted in the block to engage and interconnect wires in adjacent bores of that section. The sections may be supported in an elevated position to afford use of a tool, such as a pliers, to seat a contact element, and the contact element and the block include means which afford disengaging a contact element with a pointed tool such as a screwdriver.

3,812,450
RELAY SOCKET

Stephen S. Simovits, Jr., Woodridge, and Christ J. Dumas, Forest View, both of Ill., assignors to American Plasticraft, Chicago, Ill.

Filed Apr. 3, 1972, Ser. No. 240,666
Int. Cl. H02b *1/02*
U.S. Cl. 339—128 **4 Claims**

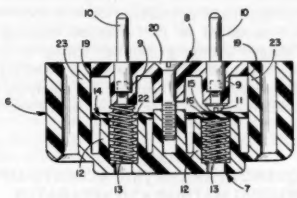


A socket for a plug-in type of relay, which socket is formed of an insulative material and may be mounted from the front or from the rear side of a relay mounting panel.

3,812,451
SANDWICH CONNECTOR PLUG

Neal J. Buglewicz, 12 Empty Saddle Rd., Rolling Hills Estates, Calif.

Filed Oct. 30, 1972, Ser. No. 302,068
Int. Cl. H01r *13/50*
U.S. Cl. 339—155 R **3 Claims**

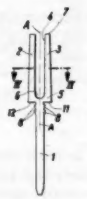


A sandwich plug for use in a telephone installation for connecting an automatic dialing mechanism in series with the telephone line.

3,812,452
CONTACT SPRING FOR PLUG CONNECTORS

Hermann Sturm, Flein, Germany, assignor to Bach & Co., Heilbronn, Germany

Filed Aug. 11, 1972, Ser. No. 279,995
Int. Cl. H01r *11/22*
U.S. Cl. 339—258 R **10 Claims**



A contact spring for plug connectors stamped out of noncorroding sheet metal and comprising an approximately rectangular shank with a U-shaped head piece connected thereto, which head piece has two arms which face one

another and which are spaced equidistant from a plane of symmetry running between them and in the longitudinal direction of the shaft. That width of the arms which is parallel to the plane of symmetry is broadened to a multiple of the thickness of the sheet metal by applying pressure to the arms in a direction transverse to the plane of symmetry.

3,812,453

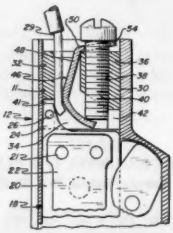
ELECTRIC TERMINAL CONNECTOR

Rudolf H. Kiessling, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Apr. 17, 1972, Ser. No. 244,639

Int. Cl. H01r 9/10

U.S. Cl. 339—266 R **4 Claims**



The connector includes a connector body having a wire-receiving aperture therein and also having a threaded opening therein extending generally parallel to the wire-receiving aperture, a screw mounted in the threaded opening, and a generally C-shaped clamping member having an actuating portion loosely mounted on the screw and a clamping portion disposed in the wire-receiving aperture, the clamping member being fulcrumed on an edge of the wire-receiving aperture.

3,812,454

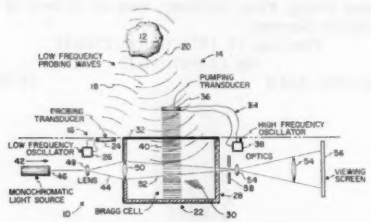
LOW FREQUENCY PARAMETRIC ACOUSTO-OPTICAL IMAGING METHOD AND APPARATUS

Pravin G. Bhuta, Torrance; Robert L. Johnson; Robert Aprahamian, both of Marina Del Rey, and Jerold L. Jacoby, Lakewood, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 2, 1973, Ser. No. 319,987

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R **10 Claims**



An object situated in an acoustic medium, such as water or soil, characterized by relatively high acoustic absorption is optically imaged by a novel acousto-optical imaging technique. Relatively low frequency acoustic waves which are subject to relatively low attenuation by the ambient medium are transmitted through the medium to the object and emanate from the object as distorted acoustic waves containing information defining an image of the object. These distorted acoustic waves are received by an acousto-optical coupling medium which is excited by relatively high frequency and large amplitude acoustic waves. The distorted low frequency acoustic waves and high frequency waves undergo non-linear interaction to produce in the coupling medium resultant acoustic wave sets having frequencies equal to the sum and difference, respectively, of the low and high frequencies and each containing essentially the same image information as the distorted waves. A monochromatic light beam is projected through the coupling medium to impinge the wave fronts of one resultant wave set, preferably the sim wave set, at an oblique angle which causes Bragg diffraction of the light waves by the acoustic waves, such that the light waves emerging from the coupling medium form an optical image of the object.

3,812,455

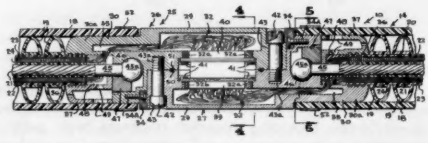
MARINE SEISMIC STREAMER CONNECTOR STRUCTURE

Raymond H. Pearson, Richardson, Tex., assignor to Whitehall Electronics Corporation, Richardson, Tex.

Filed Jan. 16, 1973, Ser. No. 324,122

Int. Cl. G01v 1/00; H04b 13/00

U.S. Cl. 340—7 R **14 Claims**



A multi-section marine seismic streamer construction wherein each streamer section has identical couplers at opposite ends. The couplers have a partly separable cylindrical end portion interfitted in the streamer outer jacket and clamped about a strain cable anchor head and an end portion of a trunk cable running through the section. The couplers also have semi-cylindrical portions to mate with like portions of campanion couplers along a diametric plane of the streamer, with male and female electrical plugs in plug cavities in the mating portions coupled together, and mounting bolts perpendicular to the diametric plane securing the mating portions together.

3,812,456

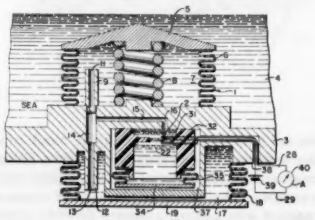
A HYDRO-ACOUSTIC FILTER

Richard N. Lane, and Claude W. Horton, both of Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1956, Ser. No. 579,700

Int. Cl. H04r 23/00

U.S. Cl. 343—8 R **5 Claims**



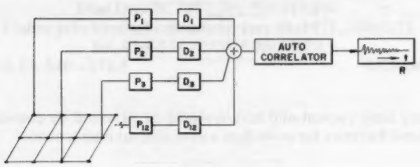
This invention relates to a hydroacoustic filter of a character adapted to be used as a passive frequency selective network for feeding an acoustic pressure sensitive detector or the like. The filter along with the accompanying detector are

each well adapted for use in combination, as a part of an acoustic wave detecting mechanism for naval mines.

3,812,457
SEISMIC EXPLORATION METHOD

Charles E. Weller, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,350
Int. Cl. G01v *1/36*
U.S. Cl. 340—15.5 TD **6 Claims**

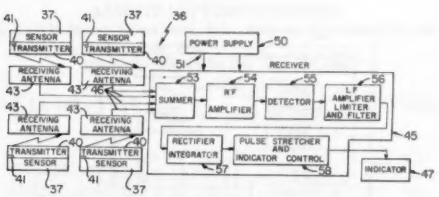


Seismic exploration is conducted without using a seismic sound source by recording a plurality of relatively long stretches of ambient earth noise data at each of an array of seismic receiving stations, preprocessing the data from each station and producing correlation functions in which the data from each station is presented as a seismic data trace analogous to a conventional seismogram.

3,812,458
POWER SUPPLY WITH UNIDIRECTIONAL CURRENT FLOW FOR A PNEUMATIC TIRE LOW PRESSURE MONITORING AND WARNING SYSTEM

Charles E. Hill, Lynn, and William R. Brobeck, Richmond, both of Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Sept. 15, 1972, Ser. No. 289,697
Int. Cl. B60c *23/04*
U.S. Cl. 340—58 **8 Claims**

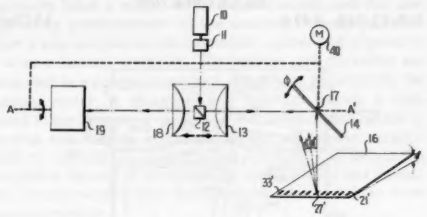


An electrical circuit for eliminating severe voltage fluctuations in a battery power supply and providing a substantially constant voltage to an associated output connection and a pneumatic tire low pressure monitoring and warning system using such circuit is provided. The circuit comprises a diode connected to the power supply with the output connection being connected to a voltage regulator which is in turn connected to receiving means of the system. A storage capacitor is provided and has one end connected between the output connection and ground so that in the event of a sudden voltage drop in power supply the voltage across the diode will be reversed to thereby cease current flow therethrough and allow the storage capacitor to supply the output connection. Current limiting means may be connected between the diode and the output connection.

3,812,459
OPTICSCAN ARRANGEMENT FOR OPTICAL CHARACTER RECOGNITION SYSTEMS

John H. MacNeill, and Ronald R. Willey, both of Indialantic, Fla., assignors to Optical Business Machines, Inc., Melbourne, Fla.

Filed Mar. 8, 1972, Ser. No. 232,893
Int. Cl. G06k *9/10*
U.S. Cl. 340—146.3 F **16 Claims**

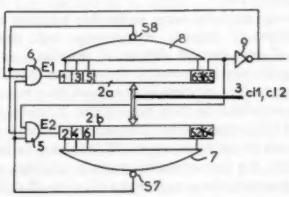


An optical arrangement for character recognition systems utilizes the same optical path for both illuminating the text and projecting the text onto an array of photosensitive elements. A low power laser beam of cross-section slightly larger than a unit vertical slice of a text character is projected by a prism through a lens arrangement to a scanning mirror which reflects the beam to sequentially illuminate individual text character slices. Each illuminated slice is reflected by the mirror through the lens arrangement onto a linear array of photosensitive elements. The focus of the lens arrangement is varied in synchronization with the mirror scan to correct for changes in the distance between the mirror and text characters at different scan angles. The page is oriented at a slight angle relative to the scan axis of the mirror to eliminate specular reflection. The resultant skew created in the reflected characters as a function of scan angle is compensated for by rotating the photosensitive array about the optical path axis as a function of mirror scan angle.

3,812,460
READ-HEAD FOR AN OPTICAL CHARACTER-RECOGNITION SYSTEM

Georges Solimans, and Leon Felix Personnaz, both of Paris, France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Sept. 15, 1972, Ser. No. 289,392
Claims priority, application France, Sept. 17, 1971, 71.33569
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 MA **17 Claims**



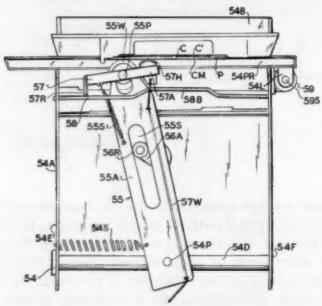
A read head for an optical character-recognition system including a plurality of photodetectors coupled to at least two shift registers, clock signals for activating the shift registers, and a logic circuit for interconnecting the shift registers. By varying the arrangement of the logic circuit elements, the read head can be adapted for a plurality of scanning modes used in

conjunction with optical character-recognition systems. The logic circuit suppresses false data groups introduced by spurious photodetector signals.

3,812,461
CREDIT VERIFICATION APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 30,450, April 21, 1970, Pat. No. 3,696,335. This application Oct. 13, 1972, Ser. No. 294,662
Int. Cl. G06k *3/00*
U.S. Cl. 340—149 A **13 Claims**



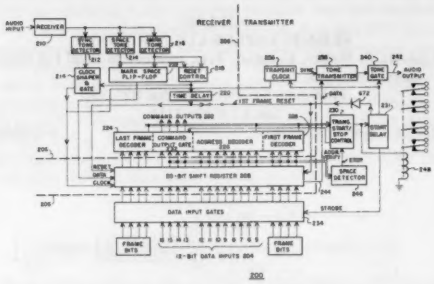
An apparatus and method for verifying the status of accounts such as credit card accounts prior to extending credit. Codes representing bad accounts such as overdrawn or lost card accounts are recorded in a memory and are automatically compared with codes of accounts presented to the system. In one form, the account to be verified is defined by a code generated when a code recorded on a magnetic recording strip of a card is automatically read resulting in the generation of electrical code signals which are compared in a comparator with those reproduced from the memory. The apparatus includes a special card printer and reader, means for preventing the completion of a transaction or the removal of a card from the reader if the account is indicated as a bad account, and means for photographing the person presenting the card if the account is not verified. Special means are also provided to verify the card holder as the card owner.

3,812,462
REMOTE MONITORING AND REMOTE CONTROL SYSTEMS

Edward J. Crossland; James H. Blossom, and Lester Q. Krasin, all of Tulsa, Okla., assignors to Seismograph Service Corporation, Tulsa, Okla.

Filed Nov. 17, 1972, Ser. No. 307,494
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **7 Claims**

Four basic modules serve as flexible building blocks for the construction of remote monitoring and remote control systems of any desired degree of simplicity or complexity. Remotely located addressable transceiver modules may each initiate up to four control actions and may monitor up to 12 Boolean variables or their equivalent. A multiplexer module enables a single transceiver module to initiate up to 16 control actions and to monitor up to 48 Boolean variables or their equivalent. An accumulator module enables a transceiver module to count the occurrences of up to 12 different events. An analog-to-digital converter module enables a transceiver module to monitor up to 10 analog signals. Remotely located module arrays are assembled and are connected to a centrally located transceiver by any suitable two-way, voice-grade communications system. The monitoring and control system is then operated by having the centrally located transceiver address commands to and receive data back from individual remotely located module arrays. A system may include anywhere from one to over 4,000 remotely located arrays of one to four modules each. The remotely located arrays draw

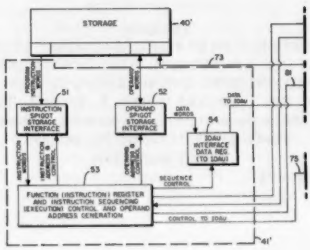


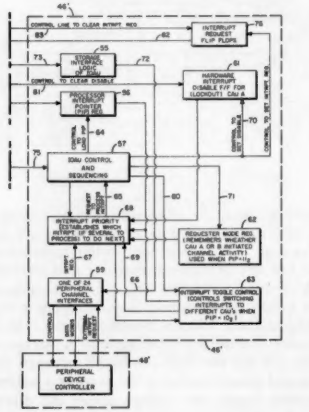
very little current and may typically be powered by conventional batteries for more than a year without maintenance.

3,812,463
PROCESSOR INTERRUPT POINTER

Archie E. Lahti, Minneapolis, Minn., and Donald G. McBeath, Furlong, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,608
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **2 Claims**




46'
CONTROL LINE TO CLEAR INTRPT REG
INTERRUPT REQUEST FLIP FLOPS
STORAGE INTERFACE OF IOAU
HARDWARE INTERRUPT DISABLE F/F FOR LOCKOUT1 CAU A
PROCESSOR INTERRUPT POINTER (SPUP REG)
IOAU CONTROL AND SEQUENCING
INTERRUPT PRIORITY ESTABLISHER WHICH INTRPT IF SEVERAL TO PROCESS TO DO NEXT
REQUESTER MODE REG (UNEMERGENCY WHEATHER CAU A OR B INITIATED CHANNEL ACTIVITY) USED WHEN PIP=11
ONE OF 24 PERIPHERAL CHANNEL INTERFACES
INTERRUPT TOGGLE CONTROL (CONTROLS SWITCHING INTERRUPTS TO DIFFERENT CAU'S WHEN PIP = 10)
PERIPHERAL DEVICE CONTROLLER
46'

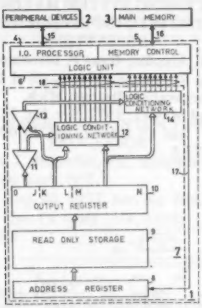
In a multiprocessor system employing at least one Input/Output Access Unit (IOAU) and two Com-

mand/Arithmetic Units (CAU), a system for selectively routing exernal interrupt request signals through said IOAU to either of said two CAU's directly to said two CAU's alternately, or to the CAU which originated the activity resulting in the generation of the interrupt request signal.

3,812,464
MULTIPLE ADAPTIVE DECODING SYSTEM FOR BINARY MICROINSTRUCTIONS

Giancarlo L. Collina, Cermenate, and Giancarlo Tessera, Milano, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 26, 1972, Ser. No. 317,894
Claims priority, application Italy, Dec. 29, 1971, 33063/71
Int. Cl. G05b *15/00*; G06f *15/20*
U.S. Cl. 340—172.5 **2 Claims**

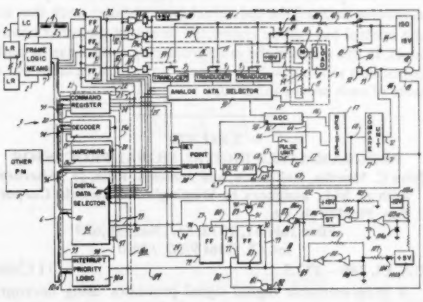


A binary data handling system is provided wherein logical and arithmetical operations are controlled by microinstructions stored in a read only memory. To minimize the maximum word length required for the read only storage in the system, a function code of variable length is used which has a fixed length equal to the minimum length required for all function codes and a function code complement of variable length.

3,812,465
REMOTE SET POINT CONTROL

Ronald P. Mann, Shorewood, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,465
Int. Cl. H03b *3/04*
U.S. Cl. 340—172.5 **37 Claims**

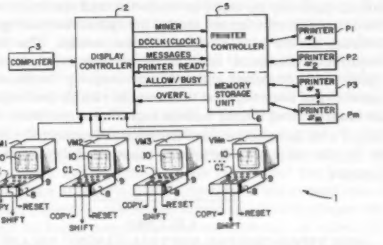


A loop communication system includes a loop controller generating multiple bit message frames for selectively controlling a plurality of remotely located transducers connected to the loop by a point module set point adjustment unit having an address decoder and a command register. Each unit controls a transducer such as a D.C. motor with a feedback potentiometer and selectively connects the potentiometer to an analog-to-digital converter to convert the analog feedback signal to a digital signal such as a two digit binary-coded-decimal number to read the set point in terms of the span percentage. Each remote set point adjustment unit includes a motor selection and feedback connecting circuit coupled to the command register and responsive to a message frame to selectively latch a motor to an isolated supply and the corresponding potentiometer to the converter. A set point register is also coupled to the command register and responsive to store a desired set point. The register and converter are connected to a comparator which is operable to terminate the resetting motor. A command and interrupt section is connected to the command register and includes a latch means to establish and hold the motor and related adjustment circuitry active to complete a readjustment and further to detect the completion thereof to terminate the readjustment and initiate final communication with the communication system to clear the point module.

3,812,466
NEW LINE PROCESSING APPARATUS FOR A DATA PROCESSING PRINTOUT SYSTEM

Barry S. Rich, Cherry Hill, N.J., assignor to Ultronic Systems Corp., Moorestown, N.J.

Filed July 21, 1972, Ser. No. 273,998
Int. Cl. G06f *3/12, 7/02*
U.S. Cl. 340—172.5 **8 Claims**



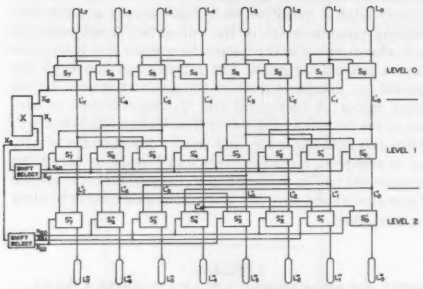
Data processing printout system including a processing arrangement for processing new-line and other characters in messages originating from a computer or from video display terminals. The processing arrangement includes an input register for receiving in succession the characters of each message. For each new-line character received by the input register, a new line control bit is added to the next character which is not a new-line character, and the character with the new line control bit is transferred to a buffer and, thereafter, to a memory storage unit to which a number of printers are coupled. The new-line character itself is prevented from being transferred to the buffer or to the memory storage unit. In the case of successive new-line characters received by the input register, each of the new-line characters following the first new-line character, with the exception of the last new-line character, is replaced by a space character and a new line control bit is added thereto, and a new line control bit is added to the character following the last new-line character which is not a new-line character. The characters with the new line control bits added thereto are transferred to the buffer and, thereafter, to the memory storage unit. Again, the new-line characters are prevented from being transferred to the buffer or to the memory storage unit. The absence of new-line characters in the memory storage unit leads to a conservation of storage space therein and simplifies new-line decoding needs of the system.

3,812,467

PERMUTATION NETWORK

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Sept. 25, 1972, Ser. No. 291,850
Int. Cl. G06f 7/00; H03k 19/00
U.S. Cl. 340—172.5 5 Claims



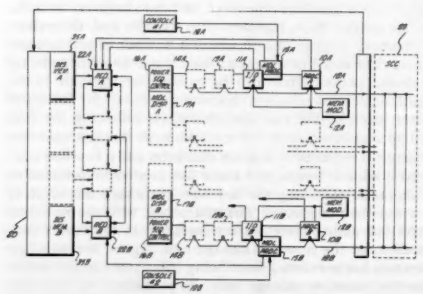
The instant invention relates to a unique logic network whereby data into and out of the memory array of a specialized digital computer will be permuted such that the data will maintain a convenient and consistent order on a data interface. The network may be constructed using commonly-available *n*-channel data selectors. Fundamentally, the invention functions in conjunction with a digital computer memory array whose data storage pattern is such that accesses to the stored data may be made in word-oriented mode, bit-oriented mode, or mixed-oriented mode, the latter comprising characteristics of the two aforementioned modes. The invention requires a minimum amount of extra-network control circuitry, and comprises a plurality of uniquely identical smaller networks of such size that they may be readily packaged on individual printed circuit boards such that a minimum of inter-board wire connections are necessary. Further, the similarity of smaller networks facilitates maintainability of the entire network.

3,812,468

MULTIPROCESSING SYSTEM HAVING MEANS FOR DYNAMIC REDESIGNATION OF UNIT FUNCTIONS

James E. Wollum, Glendora; Hans P. Birchmeier, Diamond Bar, and Richard S. Sharp, Sierra Madre, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1972, Ser. No. 252,874
Int. Cl. G06f 11/06, 15/00
U.S. Cl. 340—172.5 8 Claims



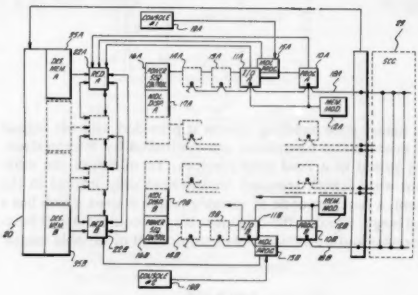
This disclosure relates to a multiprocessing system having a plurality of different units such as processor, I/O units and so forth that can be arranged into individual processing groups, the functions of which units can be redesignated in order to maintain continuous operation of the system should a malfunction occur in any one or more of such units. Each processing group is provided with a redesignator unit to represent that group, which redesignator unit senses malfunctions in any of the units in the corresponding group or in other groups and controls the reconfiguration or redesignation cycle. The system further includes a reconfiguration control unit that includes a designation memory in which are stored different designation parameters for the functional designation of the different like units in the system. These various sets of redesignation or reconfiguration control signals are selected from the designation memory in response to condition sensed in the system by the various redesignator units.

3,812,469

MULTIPROCESSING SYSTEM HAVING MEANS FOR PARTITIONING INTO INDEPENDENT PROCESSING SUBSYSTEMS

Erwin A. Hauck, Arcadia; Hans P. Birchmeier, Diamond Bar, and Dongsung R. Kim, El Monte, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1972, Ser. No. 252,903
Int. Cl. G06f 11/06, 15/00
U.S. Cl. 340—172.5 12 Claims



This disclosure relates to a multiprocessing system having a plurality of different units including processors, I/O controllers and the like which can be arranged into individual processing groups. A plurality of control buses are provided one for each group, each control bus being coupled to each unit of that group. A control bus configuration unit is provided to receive each of the individual control buses such that any one control bus can be connected to any of the other control buses. In this manner, the multiprocessing system can be partitioned into separate subsystems each of which includes one or more of such processing group.

3,812,470

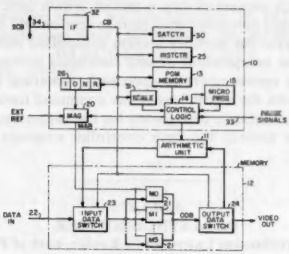
PROGRAMMABLE DIGITAL SIGNAL PROCESSOR

John C. Murtha, Baltimore, and James A. Ross, Jr., Aberdeen, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,639
Int. Cl. G06f 9/00, 11/00
U.S. Cl. 340—172.5 11 Claims

A programmable digital signal processor using microprogrammed macro instructions to perform complex arithmetic instructions and other complex data processing instructions is disclosed. A plurality of address counters and memory modules are included to permit the generation of address sequences which simplify the implementation of complex

macro instructions. A number representation scheme is used which simplifies the handling of overflows which occur during

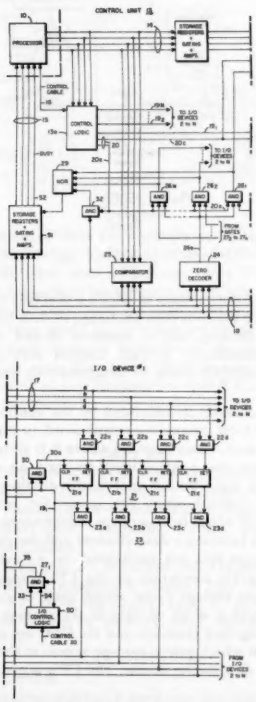


certain types of statistical problems. A typical example of a macro instruction utilizing these features is a Fast Fourier Transform.

3,812,471
I/O DEVICE RESERVE SYSTEM FOR A DATA PROCESSOR

George R. Finnin, Collegeville, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,991
Int. Cl. G06f *3/04*, *13/06*
U.S. Cl. 340—172.5 **4 Claims**

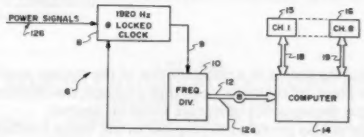


An I/O device reserve function is provided for a data processing system in which any of a plurality of input-output (I/O) devices can be selectively reserved to any of a plurality of programs being executed by the system. A reserve register is located in each of the I/O devices to be reserved. On command from a program the reserve register of a selected device is loaded with a bit pattern which identifies the reserving program. The bit pattern stored in the reserve register of the device is compared with the bit pattern of any subsequent program attempting to reserve the same device. If the bit patterns are not identical the subsequent program receives a device "-busy" signal indicating that the called device is reserved. A release circuit is provided for releasing the reserved device upon issuance of a release command thereto.

3,812,472
NOISE REJECTING, DEMAND VARIABLE REAL TIME CLOCK

James A. Mahood, Salt Lake City, Utah, assignor to Bio-Logics Systems, Inc., Salt Lake City, Utah

Filed Oct. 24, 1972, Ser. No. 300,065
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **11 Claims**



Data acquisition units used with a computer, such as medical parameter input terminals, are sampled at 60 Hz as well as multiples and submultiples thereof, thereby to mitigate noise coupled to the input transmission lines from 60 Hz power lines and from fluorescent lighting. A 1920 Hz phase locked clock drives a frequency divider to provide signals at submultiples thereof (including 60 Hz as well as multiples and submultiples thereof), thereby providing a multi-frequency real time clock source for sampling data channels. However, instead of causing a computer interrupt for the highest sampling rate of the real time clock and determining whether or not any interrupt is to take place at that frequency, interrupts are caused only at the highest currently-demanded sampling rate a hardware embodiment includes programmable multiplexers to select the clock frequency related to the desired sampling rate for each channel, programmable countdown for the number of samplings required at each channel, and priority means to sample the channels one at a time in an orderly sequence, regardless of frequency or time of starting of the sampling, the ignoring those channels for which sampling is not required. This aspect of the invention may be implemented in software utilizing a general purpose computer or a multipurpose minicomputer.

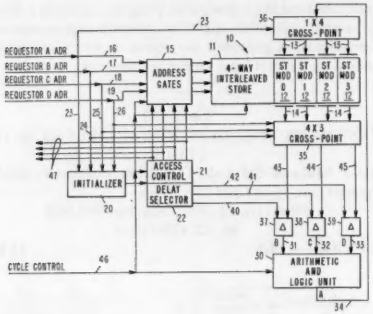
3,812,473
STORAGE SYSTEM WITH CONFLICT-FREE MULTIPLE SIMULTANEOUS ACCESS

Stuart G. Tucker, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1972, Ser. No. 309,320
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **8 Claims**

The storage system is comprised of a plurality of random access storage modules, each module having a plurality of addressable storage locations. Interleaved addressing is provided such that consecutively numbered systems addresses are contained in consecutively numbered storage modules. A plurality of requestors desiring access to a plurality of addressable locations in the storage system are provided simultaneous access to the storage system. Prior to initiating access by all the requestors, that portion of each requestors' address which is

utilized to access a particular storage module, is compared with all other requestors. Logic is provided to detect when two or more requestors desire an initial access to the same storage module. On a priority basis, controls are provided to permit a sequence of individual accesses to the conflicting requestors for a number of start-up cycles until the addresses of the requestors have been incremented to a value where each will



be requiring access to a different one of the storage modules. At this point, all requestors can then proceed, simultaneously, to access the sequence of storage locations desired.

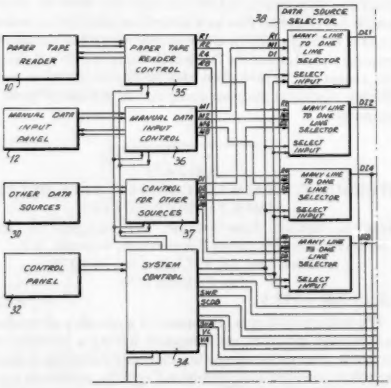
Logic is also provided to respond to the initial conflict detection to provide variable amounts of delay to the accessed operands by the various requestors to present the first and all subsequent operands accessed by each requestor, simultaneously, to a utilization device.

3,812,474

NUMERICAL CONTROL SYSTEM AND METHOD FOR VARIABLE SHAPE PROGRAMMING AND CONTROL OF MACHINE MOTION

Thomas Daniel Linn; John George Klauser, both of Holliston, Mass.; Alexander Jordan, Cranford, and George Haig Tikijian, Maplewood, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,853
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **12 Claims**



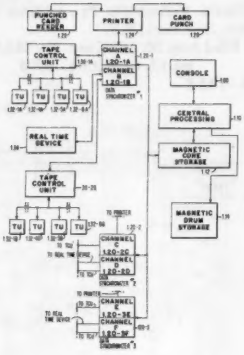
Numerical control system and method for automatically directing the movement of a machine along any prescribed path from a prepared input program containing a series of command instructions with each command represented by an array of characters defining a predetermined segment of the path expressed in terms of mathematical algorithms; the system including character recognition means, a memory section in which numerical data is stored, a data processing section, an output command data storage section and a path controller wherein the memory section is supplied with such numerical data independent of said command instructions and wherein the system operates upon such numerical data in accordance with the algorithms of the command instructions to define the coordinate dimensions for the prescribed path and in response thereto the path controller executes the commands.

3,812,475

DATA SYNCHRONIZER

Carl L. Christiansen; Lawrence E. Kanter, both of Poughkeepsie, and George R. Monroe, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, New York, N.Y.

Filed Dec. 26, 1957, Ser. No. 705,447
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **91 Claims**



A data processing system in which a plurality of data channels control the simultaneous exchange of data between many input/output devices, and a common shared storage. The channels automatically extract control instructions from storage and interpret them to independently carry out data transfers.

Each data channel is initialized by the central processing unit (CPU) which causes a control word to be transferred from storage to the data channel where it is stored. The data channel utilizes the control word to start an input/output operation. The input/output operation is continued automatically by the channel which has means for retrieving subsequent control words from storage independent of the CPU. Data transfers between a data channel and the storage over a common storage bus are performed by a "cycle stealing" capability wherein execution of the CPU program may be delayed for one storage cycle, which cycle is utilized by the channel to store a word of data in the storage. Competing requests among data channels and the CPU are resolved by a priority circuit which grants storage access to the highest priority channel demanding access. The CPU is given the lowest priority.

Since the channels direct the flow of information between I/O devices and main storage, they relieve the CPU of the task of communicating directly with the devices and permit data processing to proceed concurrently with I/O operations.

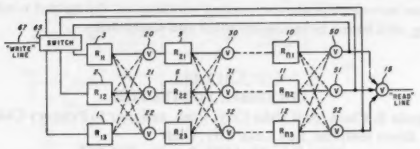
3,812,476
MEMORY DEVICE

Harvey G. Cragon, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 199,179, Nov. 16, 1971. This application Sept. 13, 1973, Ser. No. 397,055

Int. Cl. G11c *11/40, 21/00*

U.S. Cl. 340—173 RC **2 Claims**



A memory device is disclosed. The memory device is comprised of a plurality of shift registers and a plurality of majority voters. The outputs of each of said shift registers are connected to the inputs of each of said majority voters.

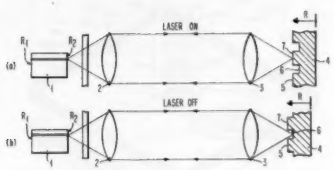
3,812,477
METHOD FOR SUPERRESOLUTION IN AN OPTICAL MEMORY

Harold Wieder, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,170

Int. Cl. G11c *13/04*

U.S. Cl. 340—173 LM **12 Claims**



A light beam method for optically resolving information stored in a data storage medium as areas of differing reflectivity by directing light from a laser operating below threshold onto the storage surface for reflection back into the laser cavity, with reflected light from the higher reflectivity area only enabling the laser cavity to exceed threshold and cause lasing of the laser. Such lasing is indicative of the presence of the high reflectivity area. Alternative embodiments utilizing lasers capable of lasing at two frequencies which share a common energy level are shown.

3,812,478
SEMICONDUCTOR STORAGE DEVICE

Norio Tomisawa; Takehisa Amano; Yasuji Uchiyama, and Takatoshi Okumura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

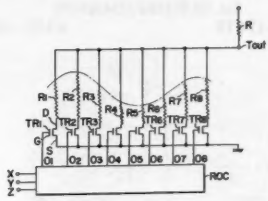
Filed July 27, 1972, Ser. No. 275,899

Claims priority, application Japan, July 31, 1971, 46-57838; July 31, 1971, 46-57829; Sept. 1, 1971, 46-67293; Nov. 22, 1971, 46-93974; Nov. 22, 1971, 46-93975; Nov. 22, 1971, 46-93976

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **5 Claims**

Sampled analog values of a wave or a function are stored in a semiconductor storage device constituted in the form of an integrated circuit. The device comprises a plurality of storage regions each having a dimension determining an impedance value corresponding to each of the sampled values, a plurality of transistor regions connected to the respective storage regions, read-out terminals connected to the transistor regions, and an output terminal connected to the storage regions. When pulses are applied to the read-out terminals one by one successively, a wave or a function of the stored shape is produced from the output terminal. Any shape of the signal can be easily obtained. The device is very suitable for accurate mass-production.



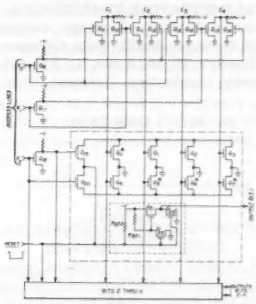
3,812,479
READ-ONLY-MEMORY WITH RADIATION SET THRESHOLD VOLTAGE

Abraham A. Witteles, Forest Hills, N.Y., and Harry Putterman, Elizabeth, N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 31, 1968, Ser. No. 789,054

Int. Cl. G11c *11/40, 11/42*

U.S. Cl. 340—173 LS **2 Claims**

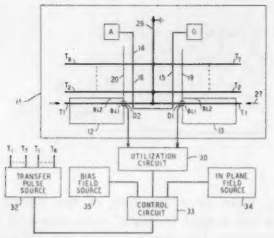


An arbitrary pattern of "ones" and "zeros" is "set" or stored into a standard MOSFET wafer containing many individual transistors, by utilizing the radiation susceptibility of such devices. That is, by selectively irradiating individual MOS transistors to a sufficient level, their corresponding turn-on or threshold voltages may be caused to shift by a predetermined amount. Hence, when a voltage pulse is applied to the gates of the irradiated transistors they will not "switch on." In this manner, all irradiated transistors will store "zeros." Conversely, since the threshold voltages corresponding to all non-irradiated transistors remain uneffected they are turned on when gated in the usual manner, and are therefore adapted to store "ones." In order to erase the original stored program, the irradiated wafer is placed in an oven-heated environment which completely anneals all radiation effects thereby restoring the threshold voltages to their original value. The same wafer may then be re-irradiated to store a new and different pattern of "ones" and "zeros."

3,812,480
CODE TRANSLATOR EMPLOYING SEQUENTIAL MEMORIES

Donald Eugene Kish, North Plainfield, and James Lanson Smith, Bedminster, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 15, 1972, Ser. No. 306,732
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **10 Claims**

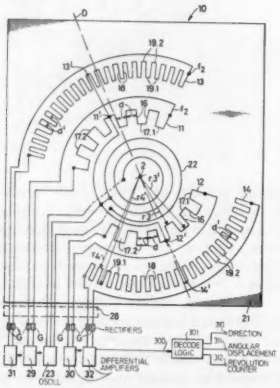


The introduction of single wall domains (magnetic bubbles) into coded positions of a pair of domain recirculating loops enables the provision of control signals at anyone of a number of possible time slots with relatively few external wiring connections. The transfer of a domain from each loop of the pair to a control loop responsive to the presence of a domain in a reference stage in each loop permits the formation of a two-bubble code in the control loop for determining the timing of the signals. The three loops define a practical translator which can be integrated into a single domain chip.

3,812,481
NON-CONTACTING ELECTRICAL ROTARY POSITION AND ROTATION TRANSDUCER

Wolfgang Stedtnitz, Neukrug, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Nov. 27, 1972, Ser. No. 310,221
Claims priority, application Germany, Nov. 26, 1971, 2158713
Int. Cl. G08c *19/06*
U.S. Cl. 340—196 **19 Claims**

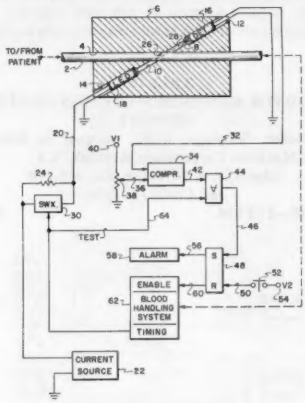


A rotor, in form of a disk, has a stator opposed thereto, similar to a pancake-type dynamo electric machine; the stator has applied thereto an energizing winding, in form of a spiral surrounding the imaginary rotor axis; the rotor has undulating conductor strips, for example printed circuit strips in form of a winding applied to the end face, inductively coupled to the energizing winding. The rotor winding is short-circuited. Opposite the rotor winding, and of similar shape and outline of the undulating winding is an output winding on the stator, the stator output winding being connected over rectifiers and differential amplifiers to a logic network. Upon position coincidence of the short-circuited winding (energized by a-c from the energizing winding) with the output winding, output voltages will appear at the winding representative of relative position between the short-circuited winding and the output winding, and hence between the rotor and stator disks.

3,812,482
AIR EMBOLI DETECTOR

Justin S. Clark, Salt Lake City, Utah, assignor to Primary Childrens Hospital, Salt Lake City, Utah

Filed Feb. 26, 1973, Ser. No. 336,112
Int. Cl. G08b *21/00*
U.S. Cl. 340—237 R **7 Claims**



A light emitting diode and a photodetector are disposed on opposite ends of an optical path oriented at an angle with respect to a substantially transparent blood conduit, such as clear plastic tubing. Liquid, such as blood or saline, whether opaque or clear, flowing in the tubing defracts the light emitted by the diode out of the straight optical path so that only an insignificant portion thereof reaches the detector, but gas, such as air emboli, due to lower indexes of refraction than liquids, hardly defracts the light, so that a significant portion reaches the optical detector. An output of the optical detector in excess of a setable threshhold causes an alarm and a disablement of the blood handling system. The optical system is tested with liquid in the tubing by over-driving the light emitting diode so that, despite defraction, sufficient light should reach the detector to cause it to provide an output equivalent to the output it would normally have when detecting gas in the tubing with the light emitting diode driven in a normal manner.

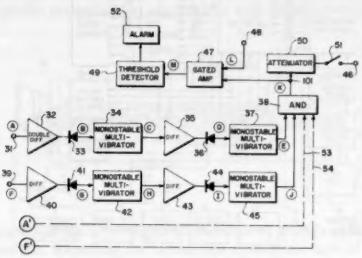
3,812,483
POINT SOURCE DISCRIMINATOR THERMAL ALARM

Howard T. Graves, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1972, Ser. No. 257,222
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 R **10 Claims**

An alarm system is provided for a scanning type far infrared system. The video signal is processed by a gated pulse blank-

ing system which permits automatic surveillance of one or more windows within the scene displayed. Any significant



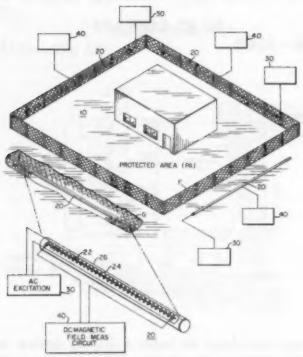
change within the selected window triggers an audible or visible alarm.

3,812,484

PERIMETER INTRUSION DETECTION SYSTEM

Robert C. Miller, and Walter J. Carr, Jr., both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1972, Ser. No. 296,376
Int. Cl. G08b *13/22*
U.S. Cl. 340—258 C **5 Claims**



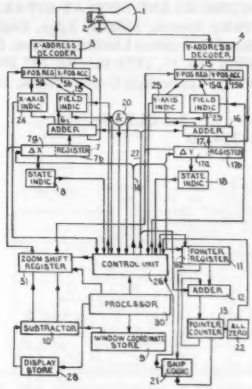
A perimeter intrusion detection system includes an elongated magnetic core member with a helical winding positioned about the magnetic core and a source of AC current applied to the helical winding. The combination of the magnetic core and helical winding is positioned adjacent to or below the surface of the earth about the perimeter of an object to be protected i.e., a building, an airplane, a military encampment, etc. Monitoring circuitry is attached to the helical winding and responds to a change in the earth's magnetic field produced by the presence of a magnetically permeable object by generating an intrusion alarm signal. The sensitivity of the monitoring circuitry can be adjusted so as to produce an alarm signal in response to the presence of magnetically permeable material carried on the person of an intruder or magnetically permeable material associated with a vehicle approaching the protected object. The invention makes use of the theory of operation of a flux gate magnetometer to provide a continuous perimeter intrusion detection device capable of monitoring several hundred feet of perimeter and providing indication of the presence of a magnetically permeable object at a specific interval of the permimeter intrusion detection system.

3,812,485

VISUAL DISPLAY DEVICE

Derek Vidion Moreton, Congleton, England, assignor to International Computers Limited, London, England

Filed May 8, 1972, Ser. No. 251,066
Claims priority, application Great Britain, May 15, 1971, 15152/71
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **5 Claims**



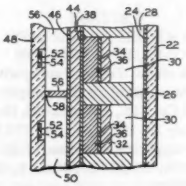
A visual display device is described for drawing lines on the face of a cathode ray tube. Information describing the lines to be drawn is held in a store and is presented in the form of positional information describing one end (the initial end) of a line together with values representing the displacement from the initial end of the terminal end of the line. By relative shifting operations on this information a standardised line drawing speed is achieved by the repeated cyclic addition of the shifted displacement values into a register holding the positional and displacement information. Other relative shifting of positional and displacement information permits effective speeding up of "drawing" any part of a line that disappears off the field of view of the cathode ray tube and the shifting of both position and displacement values enables the scale of the drawn display to be altered.

3,812,486

DISPLAY HAVING A PHOTOCONDUCTOR GAS DISCHARGE CONTROL

F. Jack Purchase, Kitchener, Ontario, Canada, assignor to Antolelic Industries, Ltd., Fort Erie, Ontario, Canada

Filed Apr. 18, 1972, Ser. No. 245,099
Int. Cl. G09f *13/26*
U.S. Cl. 340—324 M **35 Claims**



A display device of the plasma discharge type is provided with photoconductive control elements which are selectively illuminated by light bars extending angularly to electrodes which are connected to the photoconductive elements. Time

related signals are employed for sequentially establishing the light bars and for supplying signals to the electrodes. Each photoconductive element is connected in controlling relation to a respective metallic member forming one signal emitting region of a basic display area which might comprise, for example, five adjacent columns of signal emitting regions with seven of the regions in each column and arranged in aligned rows.

3,812,487

MONITORING AND DISPLAY APPARATUS

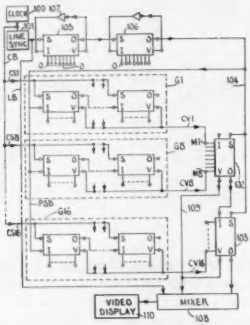
Christopher Philip Burton, Alderley Edge, England, assignor to International Computers Limited, London, England

Filed Feb. 17, 1972, Ser. No. 227,209

Claims priority, application Great Britain, Feb. 17, 1971, 4802/71

Int. Cl. G08b 5/36

U.S. Cl. 340—324 AD **4 Claims**



Apparatus is described for displaying, on a display device having a number of spatially separated indicating positions such as a television monitor screen or a matrix of display lamps, the states of a number of elements, each elemental state being primarily indicated by signals applied over one of a number of indicating lines.

The lines are connected to display converter modules which are arranged to scan the lines in sequence to produce a composite output signal which is applied to the display device. Where the number of lines is large, the serialisation of the line states may be done in stages, the first stage being the derivation of a separate composite signal from each of a number of groups of lines. The second stage then consists of deriving a final output signal by scanning the first-stage composite signals in turn.

The disclosure also deals with the use of similar converter modules for performing both the first stage and the second stage scans. It is also shown that the timing and synchronising signals needed to control the scanning and the distribution of the output signals to the display device may also be provided by similar converter modules.

3,812,488

TELEVISION RECEIVER FOR DISPLAYING A COMPUTING PROCESS

Hirokazu Yoshino, Katano; Tetsuo Yamaguchi, Hirakata, and Eiichi Tsuboka, Nara, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka, Japan

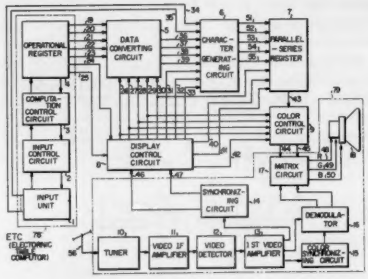
Filed July 28, 1972, Ser. No. 275,895

Claims priority, application Japan, July 31, 9171, 46-57713; July 31, 1971, 46-57714; Nov. 9, 1971, 46-89570; Nov. 10, 1971, 46-89571

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD **7 Claims**

A television receiver comprising a computing means for processing input data, a converting means in which the computing process and the computed result are written and from which the written content is read out in timing with the display



system, i.e. television system, and a display means for displaying the read information on the picture tube of the television receiver.

3,812,489

DISPLAY DEVICE FOR USE IN A DESK TOP CALCULATOR

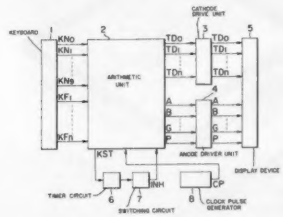
Reiji Hirano, Yokohama; Matsutoshi Ito, Narashino, and Junichi Ishiwata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,846

Claims priority, application Japan, Sept. 17, 1971, 46-84508

Int. Cl. G08b 5/36

U.S. Cl. 340—324 R **15 Claims**



A desk top calculator includes a display device which displays the numerical information. This display device consumes considerable power. In order to minimize the power consumption by the display device, display of the numerical information is ceased with the lapse of a predetermined period after once the numerical information is displayed. Instead, a pattern or patterns other than the numerical information is displayed on the display device to indicate that the numerical information is held in the register without displaying.

3,812,490

FLEXIBLE MEMBRANE DISPLAY PANEL FOR GENERATING CHARACTERS VISIBLE IN AMBIENT LIGHT

George W. Goodrich, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

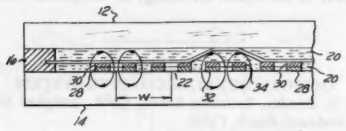
Filed Sept. 18, 1972, Ser. No. 290,187

Int. Cl. G02f 1/34

U.S. Cl. 340—324 R **17 Claims**

A digitally addressed magnetically actuated ambient light display panel is disclosed which incorporates a thin flexible magnetic membrane suspended between a ferromagnetic member and a transparent window in a fluid of a contrasting

color. A plurality of small electromagnetic elements are disposed along the face of the ferromagnetic member adjacent to the magnetic membrane, which are capable of selectively magnetizing the ferromagnetic member at discrete locations. The magnetized ferromagnetic member attracts or repels the magnetic membrane in accordance with the magnetic polarity



induced in the ferromagnetic member by the electromagnetic elements. Repelling the membrane against the face of the window at predetermined locations displaces the fluid between the membrane and the window and permits the contrasting color of the flexible membrane to become visible. A selectively repelled membrane generates characters or patterns visible under ambient light conditions.

3,812,491

RASTER-SCANNED DISPLAY DEVICES

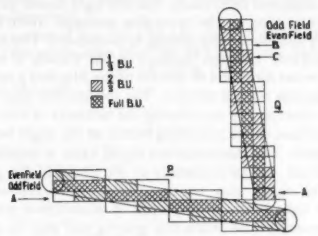
Christopher George Barraclough, Hockliffe near Leighton Buzzard, and James Roger Brown, Swavesey, both of England, assignors to GEC-Elliott Automation Limited, Cambridgeshire, England

Filed Oct. 25, 1972, Ser. No. 301,090

Claims priority, application Great Britain, Oct. 27, 1971, 50024/71

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **9 Claims**



A synthetic graphics generating system, using a C.R.T. scanned in a T.V. type raster. The video signal for each linescan is calculated digitally in real time, either during the linescan flyback periods, or during execution of the preceding linescan. The described system is used to generate a number of vectors, the calculations for which are performed on a time-shared basis by common circuitry. To prevent a stepped appearance, progressive increase and decrease in brightness is used, preferably using three discrete brightness levels.

3,812,492

METHOD OF AND APPARATUS FOR CONCENTRIC SUPERVISION AND CONTROL OF ROOMS OR PARTS OF A HOUSE OR A BUILDING

Motohiro Gotanda, No. 3-6-29, Inakashiru, Mitakei City, Japan

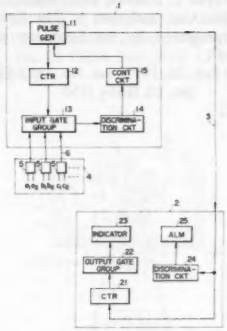
Filed Nov. 21, 1972, Ser. No. 308,308

Claims priority, application Japan, Dec. 6, 1971, 46-97782

Int. Cl. G08b *19/00*

U.S. Cl. 340—409 **7 Claims**

A system for the supervision of normal or abnormal condition of rooms or parts of a house or a building, elevators, water supply and drainage equipments and motors, or the presence or absence of persons in the rooms. Information derived from each room or compartment is applied to each gate of an input gate group provided in a signal transmission device. The output signal of each gate is generated by scanning said input gate group and is detected in a discriminator circuit to determine whether it is normal or not. A normal signal is forwarded to a signal receiving device without modifying the pulse duration of a pulse generated from a pulse generator in the signal trans-



mission device. For an abnormal signal, the duration of a pulse generated by the pulse generator is increased. The signal delivered to the signal receiving device from the signal transmission device is again discriminated in a discriminator circuit to determine whether it is normal or not. The output obtained is indicated on an indicator provided to respond to an information receiving means in the signal transmission device indicating whether the signal either normal or not according to the order of scanning by the signal transmission device.

3,812,493

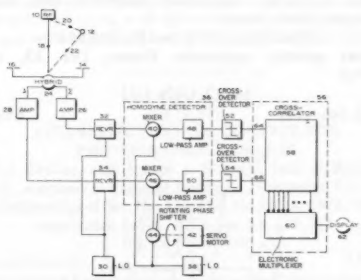
BISTATIC PASSIVE RADAR

Marko Afendykiw, Ann Arbor, Mich.; John M. Boyle, China Lake, and Charles E. Hendrix, Pacific Palisades, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1970, Ser. No. 92,186

Int. Cl. G01s *5/04, 9/04, 9/22*

U.S. Cl. 343—12 R **5 Claims**



A radar system for determining the position of a target using a radio frequency source of opportunity. The system uses an interferometer antenna and cross-correlation techniques to measure the time delay in receiving a reflected signal from the target as compared to receiving a direct signal from the signal source. Thereby, the distance from the RF source via the target to the antenna is determined. Additionally, the system uses

a plurality of interferometer antennas and cross-correlation techniques to measure the relative phase difference between the signals received by the antennas. Thereby, the angle of arrival of the reflected signals from the target is determined. Combining the range and angular information locates the target.

3,812,494

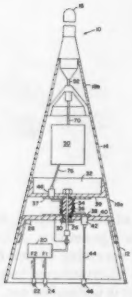
TRI-FREQUENCY INSTRUMENTATION ANTENNA

James Howell; Wayne T. Hudson, and Henry A. Krzyzewski, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1973, Ser. No. 336,662

Int. Cl. H01q 1/50

U.S. Cl. 343—852 **5 Claims**



The tri-frequency antenna is a multi-frequency antenna providing isolation between different frequency bands and an impedance match for all frequencies involved. It is ideally suited for use on spinning missiles because of its roll-symmetrical antenna pattern. It may be used as a combination transmitting and receiving antenna without danger of ionization at high altitudes with reasonable radiation power levels. In missiles, the missile outer surface serves as the antenna radiating elements. Associated matching networks and a common coupler allows both isolation and matching.

3,812,495

MOSAIC PRINTER

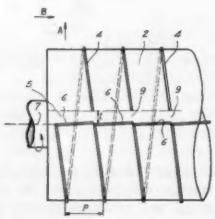
Hilrich Jan Matthijs Venker, Heemstede, Netherlands, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed Oct. 4, 1972, Ser. No. 295,051

Claims priority, application France, Oct. 13, 1971, 71.36715

Int. Cl. G02b 5/12

U.S. Cl. 346—101 **8 Claims**



A mosaic printer is provided with a cylindrical rotating drum on the outer surface of which is a raised spiral threading, and a plurality of print hammers in the form of elongated plates is located along the lengthwise edge of said drum, the print medium moved between the drum and the hammers at a fixed speed during printing. Each of the elongated plates is sloped in relation to the axis of the drum, the lower end of the plates, in relation to the movement of the print medium, being directed towards the upstream side of the corresponding movement of the spiral threading, as compared with these plates.

3,812,496

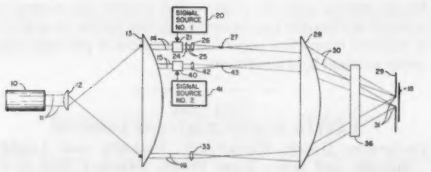
OPTICAL SIGNAL RECORDING SYSTEM

Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 22, 1972, Ser. No. 282,670

Int. Cl. G01d 9/28

U.S. Cl. 346—108 **4 Claims**



An optical system for recording time-varying signals which may have a wide range of amplitudes. The signal is recorded on a light sensitive material by means of an unmodulated and a modulated coherent light beam. The two light beams generate a diffraction grating on the recording material. Since one of the beams is modulated the grating is modulated. The recording is preferably effected through a slit having a narrow dimension in the direction of motion of the film and a relatively long direction normal thereto. The modulation may be effected, for example, by modulating the intensity of one of the beams, the phase of the recording beams or the angle between the two beams. The instantaneous signal value is represented by the contrast, spatial frequency or the phase of the grating pattern. The signal may be reproduced by a reproducing beam. The light beam is diffracted in accordance with the grating constant of the diffraction grating and may be picked up by a photosensitive detector. It is also feasible to read out simultaneously a large portion of the recorded track to obtain the Fourier transform of the signal or its power spectrum.

3,812,497

CAMERA WITH AUTOMATIC EXPOSURE CONTROLS

Tohru Nakajima, and Masatoshi Marui, both of Tokyo, Japan, assignors to Asaki Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 21, 1971, Ser. No. 136,105

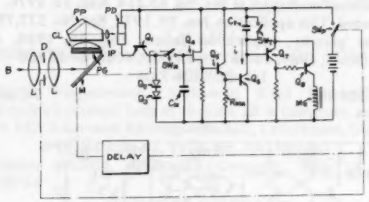
Claims priority, application Japan, May 23, 1970, 45-50755

Int. Cl. G03b 7/08, 9/07, 9/62

U.S. Cl. 354—28 **5 Claims**

A single lens reflex camera in which exposure time is automatically determined. The camera has an objective to which a diaphragm is connected to be stopped down for determining the exposure aperture when an exposure is to be made. A reflector has a rest position extending across the optical axis and is moved to an exposure position away from the optical axis when an exposure is to be made. A photosensitive element such as a photocell receives light from the reflector while the latter is in its rest position. An electrical circuit to which the photosensitive element is connected is operatively connected with a shutter of the camera to determine the expo-

sure time. In response to operation of the camera shutter, the electrical circuit is rendered operative and the diaphragm is stopped down to a preselected value so that light will be reflected by the reflector to the photosensitive element for introducing into the circuit the factors of the brightness at the



object which is to be photographed and the setting of the diaphragm. With these factors thus introduced into the circuit the reflector is displaced to its exposure position so that the film is exposed and at the same time the electrical circuit determines the exposure time.

3,812,498

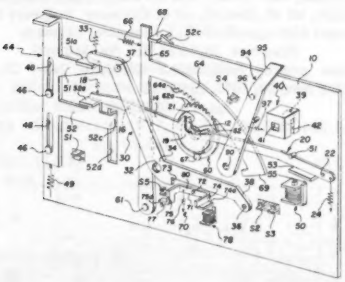
SHUTTER DIAPHRAGM APPARATUS FOR CAMERA EXPOSURE CONTROL

Paul Justin Ernisse, and Fredric Alton Mindler, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 178,130, Sept. 7, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 345,056

Int. Cl. G03b *7/14*

U.S. Cl. 354—29 **4 Claims**



Shutter-diaphragm apparatus having an exposure aperture of preselected size and an apertured member biased for movement relative to the exposure aperture as the apparatus is actuated for adjusting the size of the exposure aperture during selected scene light intensity conditions. A second member, also biased for movement as the apparatus is actuated, retains a shutter blade in a closed condition. The second member actuates a light responsive electronic circuit which controls the movement of the apertured member and controls the movement of the shutter blade in timed relation to actuation of the circuit for providing an exposure related to scene light intensity which has been adjusted for delays in operation of the apparatus.

3,812,499

ELECTRICAL EXPOSURE TIME CONTROL DEVICE FOR USE IN A PHOTOGRAPHIC CAMERA

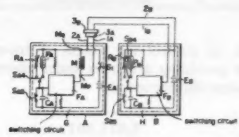
Toshio Hayashi; Akira Yoshizaki, and Kayoshi Tsujimoto, all of Osaka-fu, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

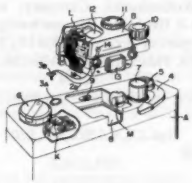
Filed Aug. 2, 1973, Ser. No. 385,004

Claims priority, application Japan, Aug. 7, 1972, 47-78311

Int. Cl. G03b *7/08, 9/58, 17/14*

U.S. Cl. 95—10 CT **12 Claims**





A camera includes a shutter whose closing is actuated by an electromagnet controlled by an electrical timing circuit which is provided with a photosensitive element and a circuit disabling switch. A pair of accessible coupling terminals are connected to the opposite ends of the electromagnet. An accessory is separably mounted on the camera and includes a photosensitive element controlled timing network having an output provided with a pair of coupling terminals which separably engage the electromagnet terminals and the disabling switch may be manually opened or is opened automatically with the coupling of the terminals. More than one shutter control accessory may be provided and the timing circuits may be of different types, with different fields of light responsiveness and with manually selectively adjustable timing intervals.

3,812,500

AUTOMATIC SHUTTER CONTROL FOR PHOTOGRAPHIC CAMERAS

Paul J. Ernisse, and Arnold J. Ettinger, both of Rochester, N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.

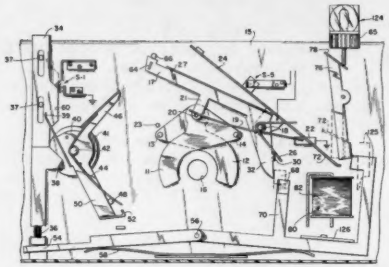
Continuation of Ser. No. 127,476, March 24, 1971. This application July 6, 1972, Ser. No. 269,371

Int. Cl. G03b *7/08*

U.S. Cl. 354—32 **2 Claims**

In a camera having a photoelectric timing circuit for determining shutter speed in accordance with the intensity of scene illumination, a mechanical speed control is provided for controlling movement of an inertia member to establish at least one predetermined shutter speed. A control member is actuatable in response to insertion of a flash lamp unit into the camera to disable a shutter control transducer in the timing circuit and to actuate the mechanical speed control to permit the inertia member to move a first preselected distance before

returning to close the shutter. The control is adapted, when the transducer is disabled, and no flash lamp unit is inserted in



the camera, to control the length of travel of the inertia member for providing a shutter speed corresponding to the camera's fastest shutter speed.

3,812,501

ELECTROMAGNETIC DRIVE FOR PHOTOGRAPHIC SHUTTER DIAPHRAGMS

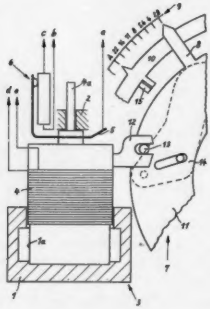
Bodo Mielke, Wolfenbuttel, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Continuation-in-part of Ser. No. 155,415,, June 22, 1971, Pat. No. 3,724,350. This application Feb. 26, 1973, Ser. No. 335,914

Claims priority, application Germany, June 26, 1970, 2031565

Int. Cl. G03b *7/08, 9/02*

U.S. Cl. 95—64 D **11 Claims**



An electromagnetic drive is provided for moving the blades or leaves of a photographic diaphragm, to adjust it to the desired aperture. The drive comprises a pot shaped magnet having an annular gap through which a cylindrical coil moves. The movement of the coil is mechanically connected to the diaphragm leaves or blades to set them to the desired position. The current flowing through the coil is controlled by an electrical bridge which, when balanced, stops the flow of current, the bridge circuit being influenced by either a position-sensitive resistor having a slider movable to various positions by the movement of the coil, or by a photo-sensitive resistor (photoelectric converter) placed behind the diaphragm so as to be responsive to variations in light resulting from changes in aperture produced by movement of the coil. Such a converter placed behind the diaphragm may also be regarded as a "position-sensitive resistor" since it is sensitive to the aperture position of the diaphragm. A latch is provided for latching the moving parts in position when the bridge circuit is balanced, to prevent or reduce overswing of the parts due to inertia. The invention is intended for still cameras, rather than motion picture cameras.

3,812,502

EXPOSURE CONTROL CIRCUIT FOR TTL CAMERA

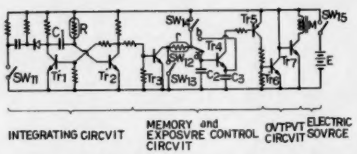
Takayoshi Sato, Tokyo, Japan, assignor to Kabushiki-Kaisha Copal, Tokyo, Japan

Continuation-in-part of Ser. No. 63,214, Aug. 12, 1970, abandoned. This application Jan. 29, 1973, Ser. No. 327,798

Claims priority, application Japan, Aug. 18, 1969, 44-65423; Oct. 2, 1969, 44-78775; Oct. 27, 1969, 44-85228

Int. Cl. G03b *7/08*

U.S. Cl. 354—51 **7 Claims**



An automatic exposure circuit for a TTL camera, The circuit includes an integrating circuit having a capacitor and a light-sensitive resistor connected in series to a source of potential. The time taken to charge the capacitor, a function of scene illumination, in turn determines the magnitude of the charge stored, or "memorized," in a second capacitor in a memory circuit. Actuation of the shutter release starts the charging of a third capacitor in an exposure control circuit and when the voltage across the third capacitor equals the potential "memorized" in the second capacitor, the shutter blades are permitted to close. In other embodiments of the invention, light-sensitive resistors are included in the charging circuits of the second and third capacitors to compensate for any change in scene illumination which might occur after the shutter release mechanism is depressed.

3,812,503

EXPOSURE INDICATOR FOR A PHOTOGRAPHIC CAMERA

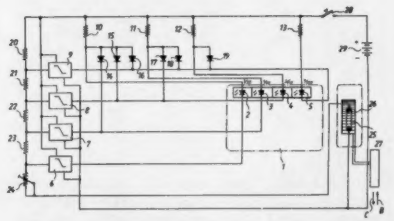
Dieter Engelsmann, Unterhaching; Eduard Wagensonner, Aschheim; Alois Rieder, and Bernhard Von Fischern, both of Munich, all of, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 28, 1972, Ser. No. 310,085

Claims priority, application Germany, Nov. 29, 1971, 2159160; Nov. 29, 1971, 2159162

Int. Cl. G03b *7/00*

U.S. Cl. 354—60 **19 Claims**



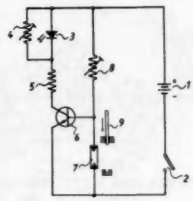
A photosensitive element is mounted to receive the light available for exposure and constitutes part of a voltage divider which has a number of taps. Each of the taps is connected to the input of a bistable stage. As the threshold of each bistable stage is passed, it serves to connect a corresponding one of a plurality of indicators to a battery, thereby energizing it.

Passing of the threshold of the next-following indicator then causes a diode to short circuit the first indicator and the energization of the second indicator. Each bistable stage thus in turn energizes its indicator and short circuits the previous indicator. Thus only that indicator remains energized for which the voltage at its corresponding voltage divider tap is most closely equal to the threshold voltage of the corresponding bistable stage.

3,812,504
INDICATOR ARRANGEMENT FOR A PHOTOGRAPHIC CAMERA

Eduard Wagensonner, Aschheim; Kurt Borowski, and Friedrich Stumpf, both of Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 12, 1973, Ser. No. 350,467
Claims priority, application Germany, Apr. 18, 1972, 2218704
Int. Cl. G01j *1/44*
U.S. Cl. 95—10 CE **5 Claims**

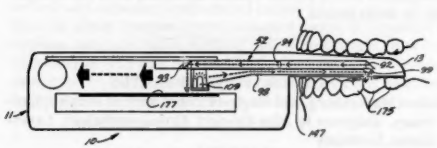


The battery of the camera has a voltage divider including a photoelectric transducer connected in parallel with it. The voltage divider tap is connected to the base of a transistor whose collector-emitter circuit is connected to a luminescent diode through a series resistor. The transistor is highly conductive when insufficient light for an exposure falls on the photoelectric transducer. Further, a variable resistor in parallel with the luminescent diode is adjusted so that the voltage drop across the luminescent diode is less than its threshold voltage for a battery voltage less than a predetermined minimum battery voltage when light is blocked from the photoelectric transducer.

3,812,505
SCANNING CAMERA

James B. Elliott, Hacienda Heights, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Nov. 6, 1972, Ser. No. 303,994
Int. Cl. G03b *37/02*
U.S. Cl. 95—11 EM **18 Claims**

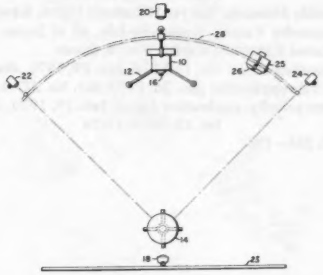


An improved scanning camera for periscopically photographing partially inaccessible objects. A slender viewing extension of the camera body is placed over the object, and a moving optical system in the body extension illuminates the object and transmits a line-scanned image of the object to a sheet of film. The camera is particularly useful for obtaining plan-view pictures of teeth in the upper and lower arches of a dental patient. The improvements described relate to an illumination and optical system, a scanning mechanism, and circuitry for controlling camera operation.

3,812,506
SYSTEM FOR CHILD PHOTOGRAPHY

Ivan J. Klebanow, 330 Hill Top Ln., Cincinnati, Ohio

Filed Mar. 16, 1973, Ser. No. 342,070
Int. Cl. G03b *15/06*
U.S. Cl. 354—80 **8 Claims**

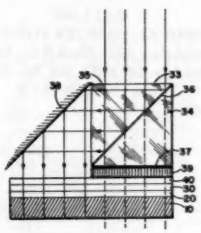


A system for photographing children utilizes a rear screen projector for attracting the attention of the child and evoking various facial expressions. The locations of the camera, the child and the lights are each at a fixed station so that the system may effectively be used by semi-skilled operators.

3,812,507
COLOR PHOTOGRAPHY

Charles W. Wyckoff, Needham, Mass., assignor to Applied Photo Sciences, Inc., Newbury, Mass.

Division of Ser. No. 876,626, Nov. 14, 1969, Pat. No. 3,663,228, which is a continuation-in-part of Ser. No. 445,496, April 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 98,176, March 24, 1961, Pat. No. 3,450,536. This application Jan. 6, 1972, Ser. No. 215,877
Int. Cl. G03b *33/12*
U.S. Cl. 354—104 **4 Claims**



A color photographic film with extended exposure response characteristics having a plurality of emulsion layers divided into sets, each set having a different photographic speed. The emulsion layers within a set have the same photographic speed but each layer is responsive to a different region of the spectrum. The emulsion layers are arranged either one above the other or side-by-side in a geometric pattern and all have D-log E characteristic curves which have substantially equal slopes. The effective speed of one set is adjusted such that it commences responding to impinging light as another set approaches saturation. This is accomplished either by selection of the basic sensitivities of the various emulsions or by the use of auxiliary means such as attenuating filters. Dye-forming

couplers may be incorporated during manufacture in all emulsion layers or may be introduced during processing. The invention may also be incorporated into a number of embodiments employing either the diazo or diffusion transfer processes. In addition apparatus employing the principles of the invention is described.

3,812,508

CAMERA PROVIDED WITH A DEVICE FOR AUTOMATICALLY PHOTOGRAPHING DATES OF PHOTOGRAPHING

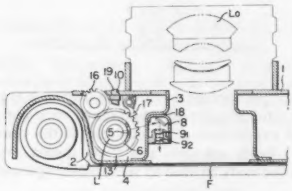
Mutsuhide Matsuda, Tokyo; Mitsutoshi Ogiso, Kawasaki, and Mutsunobu Yazaki, Kanagawa-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 110,814, Jan. 29, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,164

Claims priority, application Japan, Jan. 29, 1970, 45-9496

Int. Cl. G03b *17/24*

U.S. Cl. 354—106 **10 Claims**



An adjustable device for photographing data, numbers or characters indicating the date of photo-taking is provided in a camera. An illumination lamp illuminates the selected numbers or characters in association with the releasing of the shutter and the illuminated numbers or characters are photographed on the film. The duration of illumination of the lamp is controlled by a time control device actuated in association with the releasing of the shutter.

3,812,509

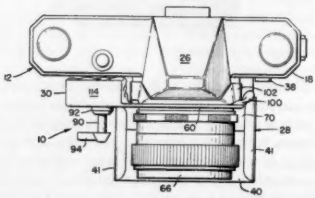
MULTIFOCAL ADAPTER FOR CAMERAS

Leonard F. Westphalen, 2021 Market St., San Diego, Calif.

Filed Apr. 14, 1972, Ser. No. 244,207

Int. Cl. G02b *15/10*

U.S. Cl. 354—195 **17 Claims**



A camera is modified by relocating its objective on a lens standard which slides on a guide fastened to the underside of the camera. The lens standard also supports a negative lens or lenses on its rear side for positioning into and out of axial alignment between the lens openings of the standard and the camera; and a tube of flexible opaque material is fastened to the lens standard and camera about the lens openings thereof so that the negative lens or lenses also are inside the tube. The lens standard is thereby movable on the guide between a position where it locates the objective at the camera's lens opening for a normal focusing range and a position remote therefrom where the negative lenses may be positioned behind the objective for telephoto effect.

3,812,510

ELECTRIC CONTROL DEVICE FOR A CAMERA

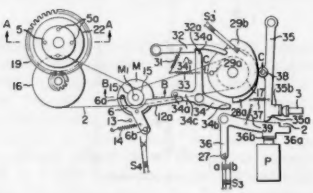
Hiroshi Aizawa, Tokyo, and Mitsutoshi Ogiso, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,743

Claims priority, application Japan, Dec. 30, 1971, 47-1089

Int. Cl. G03b *7/00, 9/28*

U.S. Cl. 354—235 **9 Claims**



An automatic shutter control system for a camera includes a continuous rotatable motor coupled to a pair of separately engageable electromagnetic clutches. The clutches are respectively operable, when engaged, for releasing the shutter to commence exposure and for winding up the shutter after exposure has terminated. When camera operation is initiated, the first clutch is engaged to release the shutter and to trigger the start of a manually selectable exposure duration. At the conclusion of the selected duration, the first clutch is disengaged and the second clutch is engaged to begin the wind-up of the shutter. An inertial sensor on the motor terminates the wind-up operation and disengages the second clutch when the increased torque on the motor from wind-up reaches a predetermined value. Where continuous operation of the camera is desired, the completion of wind-up triggers an interval control circuit which effects the re-engagement of the first clutch after a prescribed time delay to initiate another cycle of operation. Facilities are provided for overriding the manually set exposure duration whenever the required film exposure time exceeds such set duration to automatically delay the completion of the shutter release operation until the completion of the exposure.

3,812,511

PHOTOGRAPHIC APPARATUS

Hubert Hackenberg, and Siegfried Zobel, both of Munich, Germany, assignors to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 23, 1972, Ser. No. 283,234

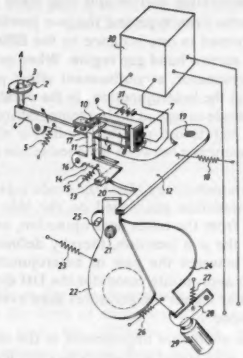
Claims priority, application Germany, Aug. 24, 1971, 2142327

Int. Cl. G03b *9/08*

U.S. Cl. 354—258 **16 Claims**

A photographic apparatus wherein the depression of a release button results in closing of a switch which connects an electrical exposure control with a source of electrical energy. The switch remains closed subsequent to termination of pressure against the release button because the contacts of the

switch are urged against each other by a spring-biased blocking pawl as soon as the latter is disengaged from a



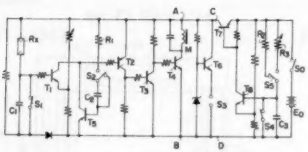
cocked shutter-actuating lever in response to depression of the release button.

3,812,512

ELECTRONIC SHUTTER FOR PHOTOGRAPHIC CAMERAS

Munetaka Shimizu, Kawagoe, and Masao Takayama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed June 27, 1973, Ser. No. 374,068
Claims priority, application Japan, June 30, 1972, 47-65722
Int. Cl. G03b *9/64*
U.S. Cl. 354—258 **6 Claims**



An electronic shutter for photographic cameras comprising a C-R delay circuit inserted into between an exposure time control circuit and a power source for making time lag between the operation of shutter button and the start of operation of said exposure time control circuit by said delay circuit, thus the whole composition of a shutter means is simplified by utilizing said time lag as working time of self-timers or as time necessary to leap up a mirror of reflex cameras. Said exposure time control circuit contains another delay circuit necessary for full synchronization of a flash device.

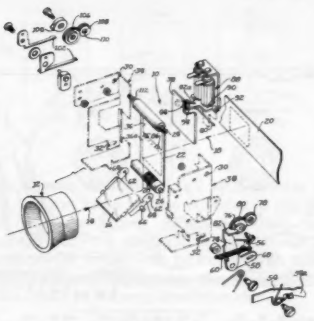
3,812,513

PHOTOGRAPHIC SHUTTER

Walter E. Berk, Roselle, and Gregory H. Kulykivsky, Park Ridge, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 15, 1972, Ser. No. 306,642
Int. Cl. G03b *9/16, 9/36*
U.S. Cl. 95—53 R **12 Claims**

A shutter apparatus and method of operating the same in a camera having an objective lens through which light rays may enter the camera. The shutter apparatus includes the combination of reciprocable shutter curtain having an exposure aperture movable to a film exposure position, and a shutter blade in juxtaposition to the shutter curtain and movable in timed relationship after the curtain is moved to cut-off exposure through the curtain's exposure aperture. In a mirror reflex camera, the mirror is moved out of the path of the light rays prior to moving the shutter curtain. The shutter curtain and shutter blade have engaging surfaces whereby they may be simultaneously returned to their cocked positions after an exposure.

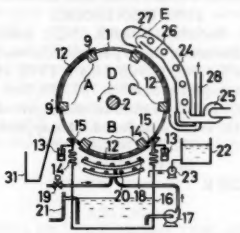


3,812,514

APPARATUS FOR FINISHING PHOTO-SENSITIVE RESIN BOARDS INTO RELIEF PRINTING PLATES

Kaname Watabe, No. 11-15 Yanakawa-cho 1-chome, Osaka, Japan

Filed Mar. 2, 1973, Ser. No. 337,477
Claims priority, application Japan, Mar. 7, 1972, 47-23434
Int. Cl. G03d *5/04*
U.S. Cl. 354—317 **3 Claims**

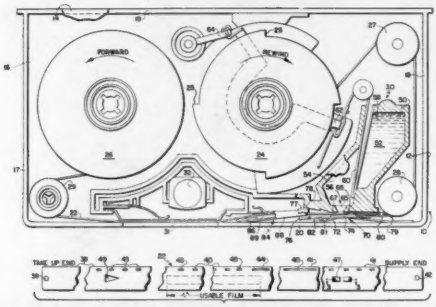


An apparatus is provided for finishing photo-sensitive resin boards exposed to ultraviolet rays through negative into relief printing plates. The apparatus comprises a tank for wash-out solution, a rotary cylindrical body above the tank, wash-out nozzle for dissolving and removing non-exposed portions of the photo-sensitive resin board attached on the peripheral surface of the rotary body, mercury arc lamps for drying and post-exposure treatments provided adjacent to the peripheral surface of the rotary body, and a driving device for controlling rotations of the cylindrical body to intermittently position the resin board opposite to the wash-out nozzles and mercury arc lamps.

3,812,515
PHOTOGRAPHIC CASSETTE HAVING AN IMPROVED FILM OPERATED PROCESSSING SYSTEM

Gerald H. Cook, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 12, 1972, Ser. No. 262,044
Int. Cl. G03d 5/00
U.S. Cl. 95—89 R **22 Claims**

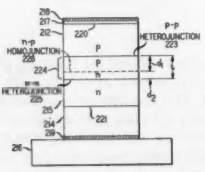


A photographic film cassette having a normally inoperative applicator system configured for depositing a developing fluid on the exposed film emulsion responsive to transport of the film in a predetermined arrangement includes a rigid actuating member carried on the film and configured for displacing a supporting pad into an operative position in supporting engagement with the film during application of the processing fluid. Preferably, the actuating member is a staple-like element affixed in clamping engagement to the film and having a portion extending obliquely therefrom so as to form an inclined arm configured to engage the pad member during appropriate advance of the film. In an alternate embodiment a rigid, conically shaped protuberance is formed in the film.

3,812,516
SPONTANEOUSLY EMITTING HETERO-STRUCTURE JUNCTION DIODES

Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Division of Ser. No. 33,705, May 1, 1970, which is a continuation-in-part of Ser. No. 787,459, Dec. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 766,902, Oct. 11, 1968, abandoned. This application Nov. 17, 1972, Ser. No. 307,377
Int. Cl. H01l 15/02
U.S. Cl. 317—235 R **13 Claims**



A light emitting heterostructure diode includes a multilayered structure having a common conductivity type heterojunction and a p-n junction separated therefrom by a distance less than the diffusion length of minority carriers, thereby defining an intermediate region bounded by said junctions.

In a single heterostructure (SH) diode there is one such heterojunction separating narrow and wide band gap regions of the same conductivity type and the *p–n* junction is a *p–n* homojunction formed in one instance by the diffusion of impurities into the narrow band gap region. When provided with an appropriate resonator, a confinement effect produced by an energy step (at the heterojunction) in the conduction band permits the SH diode to lase at higher temperatures and lower thresholds than heretofore possible, radiative electron-hole recombination occurring between the conduction and valence bands.

In a double heterostructure (DH) the diode is provided with a second heterojunction positioned on the side of the *p–n* junction remote from the other heterojunction, or positioned coincident with the *p–n* junction, thereby defining an intermediate region between the pair of heterojunctions. When provided with an appropriate resonator the DH diode exhibits lower thresholds at higher temperatures than even the aforementioned SH diode.

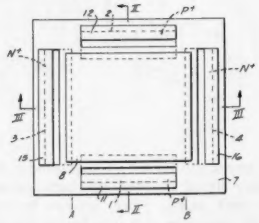
In both diodes additional improvment in the threshold occurs if the diode is provided with deep impurity levels or deep band tails.

Without a resonator, both the SH and DH diodes function as electroluminescent diodes with radiation being emitted from the intermediate region through the wide band gap region, thereby advantageously resulting in lower absorption losses and higher efficiency. Dome-like configurations of the wide band gap region of this diode are also disclosed.

3,812,517
CONTINUOUSLY VARIABLE THRESHOLD TRANSISTOR

Shuichi Sato, Tokyo, and Tadanori Yamaguchi, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 6, 1972, Ser. No. 286,839
Claims priority, application Japan, Sept. 8, 1971, 46-69546
Int. Cl. H01l 11/14
U.S. Cl. 357—23 **7 Claims**

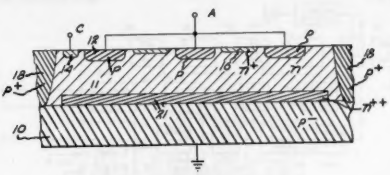


A MAOS or a MNOS having stored charge carriers at the interface of the two insulating layers whose density varies progressively in a direction laterally across the gate region thereof; that is, in a direction at right angles to the drain-source axis. The charge injection in a MAOS or MNOS system is modified so that the density of the injected charges varies across the device in a continuously decreasing manner in a direction at right angles to a line between the drain and source. Either a contactless variable capacitor or a contactless variable resistor is provided. Furthermore, a particularly effective memory device is provided by the structure. Broadly, the invention comprises a silicon substrate, a MIS gate construction in which a carrier is stored, the density of the stored carriers being varied continuously across the substrate side of the insulator from one side to the other.

3,812,518
PHOTODIODE WITH PATTERNED STRUCTURE

Bruno F. Kurz, and Armand P. Ferro, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,583
Int. Cl. H01l 15/00
U.S. Cl. 357—30 **14 Claims**

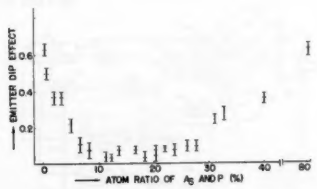


A monolithic or discrete photodiode has a patterned region, preferably in the form of elongated strips or fingers, with a spacing less than the diffusion length to obtain low capacitance without loss of photo response. Enhanced efficiency is achieved by the use of surface skin regions and/or a buried layer to confine generated carriers, and by a structure that effects combination of the epitaxial layer-substrate photodiode with the finger photodiode. The low capacitance photodiode is sensitive to visible and infrared light and is useful in high speed circuit applications.

3,812,519
SILICON DOUBLE DOPED WITH P AND AS OR B AND AS

Masakatsu Nakamura; Toshio Yonezawa; Taketoshi Kato, all of Yokohama; Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Division of Ser. No. 78,819, Oct. 7, 1970. This application June 19, 1972, Ser. No. 263,994
Claims priority, application Japan, Feb. 7, 1970, 45-10376; Mar. 2, 1970, 45-17103; Mar. 13, 1970, 45-20826; Mar. 28, 1970, 45-25627
Int. Cl. H01l 3/14
U.S. Cl. 317—234 R **10 Claims**



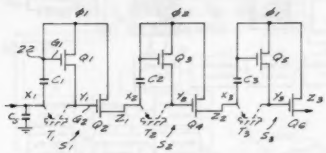
A silicon semiconductor device double doped with phosphorus and arsenic or boron and arsenic, the arsenic being present in an amount 3 to 40 percent of the other dopant and preventing lattice collapse with heavy doping concentrations.

3,812,520
PARASITIC TRANSISTOR SHIFT REGISTER

Lamar T. Baker, West Islip, Long Island, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Filed Aug. 24, 1972, Ser. No. 283,536
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R **14 Claims**

An improved high speed dynamic MOS shift register is designed to operate under the control of a two-phase clock cycle and utilizes only four MOS devices per bit of the register. This is accomplished by using the normally undesirable parasitic transistor inherently formed laterally between the adjacent P regions of two active MOS devices. The thus formed effective transistor is utilized to provide an operative conditional discharge path through the grounded substrate thereby to eliminate the need for additional isolation devices and load

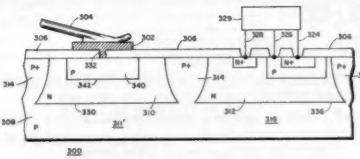


resistor ratio circuits. Accordingly, all MOS devices may be formed of a uniform minimum size effective to provide high speed low power switching. Moreover, since parasitic transistor action is actively utilized in the operation of the circuit, the active MOS devices may be formed with their P regions in closely adjacent relationship thereby to increase the density of the circuit on the semi conductor chip.

3,812,521
BONDING PAD SUBSTRUCTURE FOR INTEGRATED CIRCUITS

William Folsom Davis, and Wilson David Pace, both of Tempe, Ariz., assignors to Motorola Inc., Franklin Park, Ill.

Filed Feb. 16, 1973, Ser. No. 333,239
Int. Cl. H01l 5/02
U.S. Cl. 397—48 **10 Claims**



A bonding pad substructure in a semiconductor device prevents injection of minority carriers into the substrate during negative overvoltages applied to the bonding pad. An N-type isolated region is provided in a P-type substrate. A P-type region is provided within the N-type region, subtending the metal bonding pad which is on an oxide layer on the substrate. Shorts between the bonding pad and the semiconductor which may occur at defects in the oxide layer are thus limited to the P-type region, and negative overvoltages on the bonding pad reverse bias the PN junction so that deleterious injection of electrons from the N-type region into the substrate cannot occur.

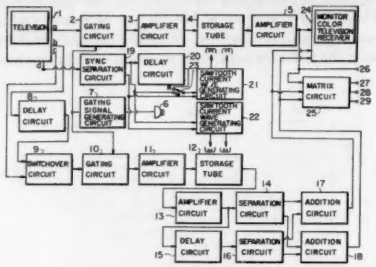
3,812,522
COLOR STILL PICTURE PROJECTING APPARATUS

Yoshiteru Izura, Toyonaka, and Keisuke Okano, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 26, 1973, Ser. No. 344,922
Claims priority, application Japan, Mar. 29, 1972, 47-31867
Int. Cl. H04n 9/16, 5/80
U.S. Cl. 358—1 **8 Claims**

A color still picture projecting apparatus is provided in which color picture signals each consisting of a luminance signal and two kinds of color signals different from each other are received, whereby the luminance signals are recorded on a first storage tube and the two different color signals are extracted at every horizontal scanning period to produce a time

series signal train which signals are then separately recorded on a target of a second storage tube by at every respective



color signals, thereafter the outputs of the first and second storage tubes are read out to reproduce a color still picture. In this way, reproduced pictures of good quality can be obtained.

3,812,523

SYSTEM FOR MAGNETICALLY RECORDING AND REPRODUCING TELEVISION SIGNALS

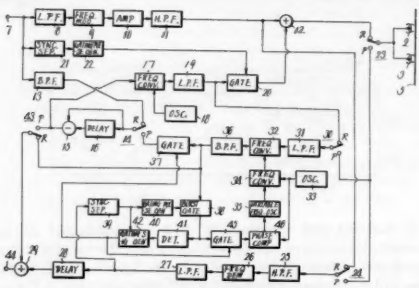
Hisaaki Narahara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,664

Claims priority, application Japan, Nov. 26, 1971, 46-95501

Int. Cl. H04n 9/02

U.S. Cl. 358—4 **3 Claims**



A television signal-handling system incorporating a one-line interval delay line and subtracter circuit connected to both the input and output of the delay line to form a comb filter for transmitting intergral harmonics of line-frequency signals to eliminate interleaved luminance signals in the chrominance band in video tape recorder apparatus. Switches reconnect the combfitter, when the apparatus is used to play back video signals with intermittently recorded chrominance components, to recreate a continuous chrominance signal by adding the intermittent chrominance components and replicas thereof delayed one line interval.

3,812,524

PRESET CONTROL SYSTEM FOR A COLOR TELEVISION RECEIVER

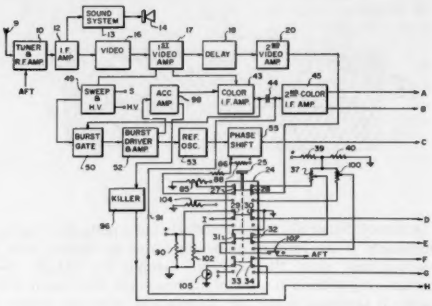
Thomas W. Ivas, Evergreen Park, and William H. Slavik, Palos Hills, both of Ill., assignors to Motorola Inc., Franklin Park, Ill.

Division of Ser. No. 140,489, May 5, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 299,063

Int. Cl. H04n 9/12

U.S. Cl. 358—28 **5 Claims**

A color television receiver is provided with the customary manual controls for permitting a viewer to adjust brightness, contrast, saturation and hue of the image reproduced by the receiver. In addition, preset controls for brightness, contrast, hue and saturation are provided, and a push-button switch is used to select either the manual or preset controls to establish the characteristics of the reproduced image. With the push-



button switch set to select the automatic or preset controls, an AND gate is enabled to cause a shift in the color demodulator angles and further to cause the relative gains of the final output amplifiers to be changed to anhance colors in the range of skin tones reproduced by the receiver.

3,812,525

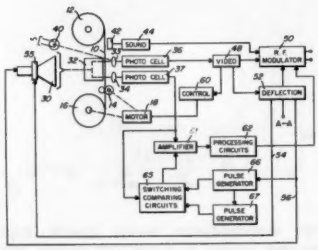
DYNAMIC PEAKING SYSTEM

Francis H. Hilbert, Addison, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed June 22, 1972, Ser. No. 265,377

Int. Cl. H04n 9/00; H03g 1/00

U.S. Cl. 358—38 **5 Claims**



A color television recording system is shown wherein trains of pulses are produced by a CRT sweeping recorded color information on a film. Each train of pulses is preceded by several pulses representative of a low frequency of the system and several pulses representative of a high frequency of the system. The two groups of pulses are separated and detected to provide DC signals which are compared to produce a difference signal. The difference signal is utilized to peak an amplifier in the recording system so that the frequency response of the system is at a predetermined ratio for the high and low frequencies.

3,812,526
LOW LIGHT LEVEL TELEVISION CAMERA

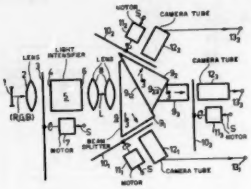
Sing Liong Tan, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,910

Claims priority, application Netherlands, Oct. 9, 1971, 7113890

Int. Cl. H04n 9/08

U.S. Cl. 358—42 **9 Claims**



A color television camera arrangement for low light levels comprising a monochrome light intensifier. A rotatable color filter having circular segments of different light transmission characteristics is provided before the light intensifier. Rotatable apertured discs which intermittently and alternately pass the light to camera tubes follow the light intensifier. Protruding parts or apertures of a disc correspond to determined segments of the color filter. Instead of the apertured discs liquid crystals which pass or do not pass light can be used.

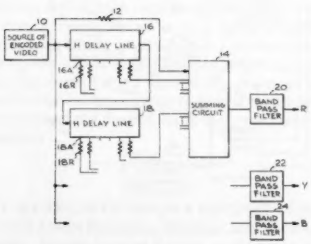
3,812,527
TWO-DIMENSIONAL FILTERING FOR ENCODED TELEVISION CAMERA

Albert Macovski, and Louis F. Schaefer, both of Palo Alto, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,653

Int. Cl. H04n 9/06

U.S. Cl. 358—47 **3 Claims**



There has been developed a single camera system capable of providing color television signals. The television camera which is employed utilizes encoding filters consisting of three superimposed line grids, each grid being of a different color and making a different angle with the vertical axis. This invention provides a filtering system whereby encoded carriers, created by two of the line grids which make the same angle but are of opposite sign with the vertical axis, may be reliably separated.

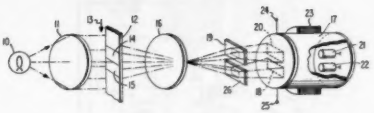
3,812,528
TWO COLOR MEDIUM FOR FULL COLOR TV FILM SYSTEM

Robert Earl Flory, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,800

Int. Cl. H04n 9/06

U.S. Cl. 358—49 **6 Claims**



A layered information record contains superimposed frames of information wherein a first frame contains luminance information of a scene as density variations of a cyan dye. A second frame superimposed on the first frame contains color encoded chrominance information as density variations of a yellow dye. In a system for playing back the layered information record, white light is projected through the superimposed first and second frames of information and viewed through a red filter for extracting the monochromatic luminance information and a blue filter for extracting the monochromatic color encoded chrominance information.

3,812,529
SYSTEM FOR DISCRIMINATING CLASSIFICATION OF A MAGNETIC RECORDING MEDIUM

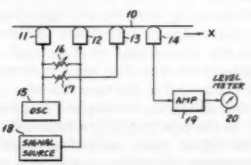
Tsuchiya Yoichi, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Aug. 31, 1972, Ser. No. 285,356

Claims priority, application Japan, Aug. 31, 1971, 46-66765; Aug. 31, 1971, 46-66769

Int. Cl. G11b 27/22, 27/34, 5/02

U.S. Cl. 360—25 **10 Claims**

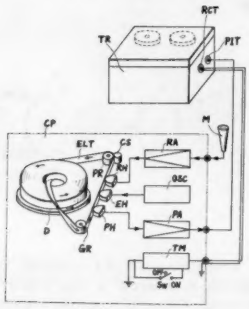


A system for discriminating the classifications of magnetic recording mediums comprises means for recording on a magnetic recording medium a discrimination signal of a constant frequency with a bias of a predetermined quantity, means for erasing partially the discrimination signal thus recorded with a specific degree of erasing in a manner to make possible reproduction, and means for reproducing the discrimination signal thus incompletely erased thereby to obtain a discrimination output. The level of the discrimination signal thus reproduced differs in value depending on the classification of the magnetic material of the magnetic recording medium.

3,812,530
MAGNETIC RECORDING APPLIANCE WITH CONTROL FOR TRANSFERRING DESIRED INFORMATION FROM AN ENDLESS TAPE

Yoshizo Ikegami, Amagasaki, Japan, assignor to Konan Camera Research Institute, Kobe, Japan

Filed Dec. 18, 1972, Ser. No. 315,831
Int. Cl. G11b *15/02, 15/18, 27/08*
U.S. Cl. 360—5 **2 Claims**



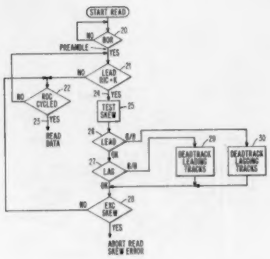
A magnetic recording appliance for use in combination with a tape recorder which is provided with a remote-control terminal for receiving remote-control signals for starting and stopping the recording operation and with a signal-input terminal for receiving signals to be recorded is disclosed. The recording appliance includes an endless magnetic recording tape which has a specified length and a drive system for driving the speed upon which said tape is operatively mounted. A magnetic recording head for magnetically recording a signal onto said endless magnetic recording tape and positioned to contact said tape, a magnetic erasing head positioned to contact said tape for erasing the recorded signal from said magnetic recording tape and a magnetic reproducing head which is arranged to reproduce the signal recorded on said magnetic recording tape are also provided. The reproducing head contacts the tape at a position ahead of the recording head in a recording track of the tape in order to reproduce the signal recorded on the tape a specified time period after the signal has been recorded. An output terminal is coupled to the magnetic reproducing head whereby the signal reproduced by the magnetic reproducing head may be applied to the signal-input terminal of the tape recorder. The reproducing head, erasing head and said recording head are arranged along the running path of the endless tape in such order that the endless tape passes first on the reproducing head, second on the erasing head and finally on the recording head. A delayed-reset timer is operatively connected to the tape recorder remote-control terminal for controlling the starting and stopping of a recording operation in the tape recorder which timer produces the remote-control signal upon activation whereby the tape recorder commences recording and ceases generating the remote-control signal after a preset delay time from a resetting of the switching, thus stopping the tape recorder.

3,812,531
VERIFYING STATUS WHILE INITIALIZING READBACK CHANNELS IN A MULTICHANNEL MAGNETIC RECORD READBACK SYSTEM

Phil H. Hall, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,987
Int. Cl. G11b *5/02*
U.S. Cl. 360—26 **8 Claims**

In starting to read a digital magnetic record of the multichannel self-clocking type, comparison circuits monitor deskewing apparatus for determining whether or not any of the channels have had an early start or no start of operation. After any channel has processed a predetermined number of bits within a data field and no deskewed data has been transferred, a test skew operation determines whether one or a small number of channels is in a marginal or almost-excessive

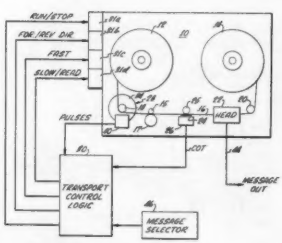


skew condition with respect to all of the other channels. If such is the case, that small number of channels is deadtracked for enabling the readback system to read the record and transfer signals while deadtracking such few channels. The system is preferably employed with so-called "on-the-fly" error corrections.

3,812,532
RANDOM ACCESS MEMORY WITH TAPE RETURN TO A MIDTAPE REFERENCE POSITION AFTER READING

David Keith Crosser, Placentia; Leonard E. Mell, Orange, and John F. Reuvers, Santa Ana, all of Calif., assignors to Carter Industries, Inc., Santa Ana, Calif.

Filed Sept. 25, 1972, Ser. No. 292,106
Int. Cl. G11b *15/52, 15/22, 15/06*
U.S. Cl. 360—72 **11 Claims**



A selected one of a number of messages prerecorded on a tape is rapidly identified and read by a transporter control arrangement in which the tape read heads are positioned near the tape midpoint in a reference position and selection of a number identifying a unique one of the recorded messages causes the transporter to move the tape in an appropriate direction. Tape motion is at high speed until a point close to, but in advance of the selected message is reached. Then tape motion is at an intermediate slower speed until the beginning of the selected message is attained, at which time, a still slower read speed is employed. At the end of the reading of the

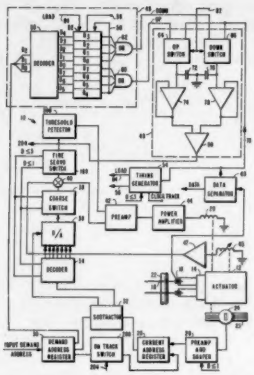
selected message, the tape is rapidly returned to its reference position in a manner analagous to the tape travel to the selected message.

3,812,533

INFORMATION STORAGE UNIT TRANSDUCER POSITIONING SYSTEM

Noboru Kimura, Gardena, and Kenneth G. Junkert, Manhatten Beach, both of Calif., assignors to Vermont Research Corporation, North Springfield, Vt.

Filed Dec. 22, 1972, Ser. No. 317,678
Int. Cl. G11b *17/00*; G06f *13/06*
U.S. Cl. 340—174.1 **22 Claims**



An information storage system is disclosed in which a reticle and associated photocell are used to effect coarse positioning of a transducer relative to a desired informational track, following which a fine system is used for track accessing and following. The transducer senses both information and servo data which are serially disposed on a storage medium such as a magnetic disc, the servo data comprising groups of magnetized pattern areas corresponding to groups of concentric tracks. The pattern areas have staggered flux reversals providing relative track indentification for each group of tracks. A digital address defining the location of a desired track within a group of tracks is decoded so as to generate a window signal determining the polarity of errors in the position of the transducer. The polarities of the sensed flux reversals are coded in time under the control of the window signal so as to provide an error signal which communicates with an actuator to move the transducer toward the desired track and into precision alignment therewith.

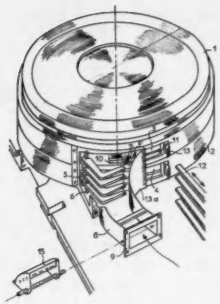
3,812,534

VENTILATION DEVICE FOR A MAGNET DISK UNIT

Hubert Cecyl Albert Rousseau, Meudon, and Yves-Jean Francois Brette, Sevres, both of France, assignors to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed Sept. 19, 1972, Ser. No. 290,307
Claims priority, application France, Sept. 30, 1971, 71.35163
Int. Cl. G11b *5/60*
U.S. Cl. 360—98 **7 Claims**

A ventilation device is provided for magnetic disk units housed in a cartridge having openings at its sides to accommodate read and write heads, and brushes. A filtered air duct leads to the interior of the cartridge with the brushes being located in the duct. A portion of the air entering the duct is directed to the opening accommodating the heads to form a dynamic air curtain which prevents the entry of polluted air inside the cartridge.

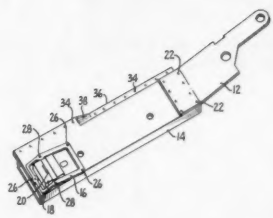


3,812,535

DISK RECORDER ARM ASSEMBLY

Ronald W. Higgins, San Jose, and Donald J. Massaro, Sunnyvale, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Oct. 24, 1972, Ser. No. 300,274
Int. Cl. G11b *5/60*
U.S. Cl. 360—103 **6 Claims**



For use in disk recording device requiring retractably support arms for carrying recording transducers over the surface of a rotating magnetic recording disk, a support arm is formed of a thin sheet of stainless steel bent and wrapped into a box configuration for strength and torsional stiffness.

3,812,536

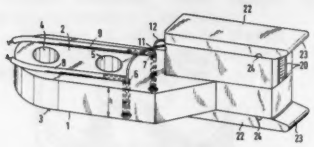
MAGNETIC HEAD HAVING GUIDE SURFACES FOR THE MAGNETIC RECORDING MEDIUM MADE OF CERAMIC MATERIAL

Siegfried Linke, Wilhdm-Magr.-Strasse 1c, Munich, Germany

Filed Sept. 8, 1971, Ser. No. 178,708
Claims priority, application Germany, Sept. 11, 1970, 2045073
Int. Cl. G11b *5/26, 5/58*
U.S. Cl. 360—122 **5 Claims**

A magnetic head for cassette tape recorders or for other recording devices, wherein those parts which form a bearing

surface for the tape and which hold the magnet system at the gap consist of a ceramic material formed so as to guide both



edges of the tape correctly across the transducing zone. The bearing surface comprises a ceramic base plate and ceramic guide plates.

3,812,537

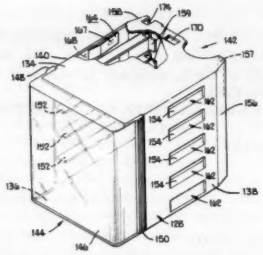
TAPE CARTRIDGE PLAYER CARTRIDGE MAGAZINE

Bernard Aron Grae, Indianapolis, and Dallas Roy Andrews, Kirklin, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,412

Int. Cl. G11b *23/02*

U.S. Cl. 360—132 **13 Claims**



A tape cartridge magazine includes a top surface and a bottom surface maintained in spaced relationship by a first and second side member to form an enclosure having a front and rear opening. Support rails within the enclosure support a plurality of tape cartridges in a stacked array. Access slots in the first side member provide access into the interior portion of the enclosure to allow manipulation of each of the plurality of tape cartridges by its detent notch between a first and a second position. Each of the plurality of tape cartridges, when in the first position, has its pressure roller farther from the enclosure rear opening than when in the second position.

3,812,538

TRANSVERSELY BANDED FILM FOR MAKING EDGE MARKED MAGNETIC TAPE

Wayne B. Stone, Jr., Bethesda, Md., and Alan Beaumont, Stamford, Conn., assignors to Indexette Tapes, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 199,475, Nov. 17, 1971. This application Dec. 8, 1971, Ser. No. 206,055

Int. Cl. G11b *5/70, 23/28*

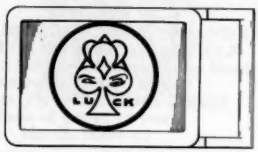
U.S. Cl. 360—134 **9 Claims**

The indefinite length base film destined for use as the substrate to which will subsequently be applied a magnetic coating to produce magnetic tape is initially formed with distinctively colored bands extending transversely of the film throughout the thickness thereof and spaced along the length of the film. Following a conventional magnetic coating step, the film is conventionally cut along multiple parallel lines, longitudinally of the film, to form a plurality of magnetic recording tapes. The colored bands are thus exposed along each of the cut side edges of each tape at spaced intervals along the length thereof. When the tape is wound on a reel, the distinctively colored side edge portions appear as concentric bands upon viewing either side edge of the wound tape.

DESIGNS

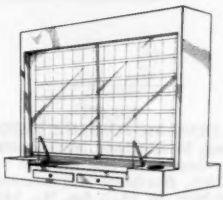
MAY 21, 1974

231,666
BELT BUCKLE
Thomas G. Pacitti, 220 Mountain St., Philadelphia, Pa. 19148
Filed Dec. 6, 1971, Ser. No. 205,470
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—431

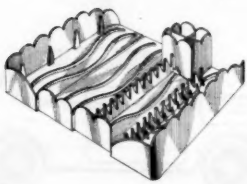


231,667
CHAIR
Paul Tuttle, Santa Barbara, Calif., assignor to Intercollection Development S.A., Kirchberg, Switzerland
Filed Oct. 10, 1972, Ser. No. 296,196
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

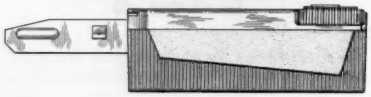
231,668
DISPLAY CABINET
Joe W. Brooks, 1909 Country Club Drive, and Delma C. Waters, E. Highway 44 Drive, A.W., both of Eustis, Fla. 32326; and Paul J. Ciener, 1560 S. Clayton St., Mount Dora, Fla. 32737
Filed June 14, 1972, Ser. No. 262,772
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—167



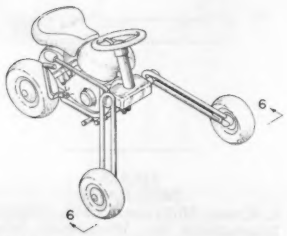
231,669
DISH RACK
Arthur A. Krause, Hollywood, Calif., assignor to K-Tel International, Inc., Minneapolis, Minn.
Filed Aug. 17, 1972, Ser. No. 281,415
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—188



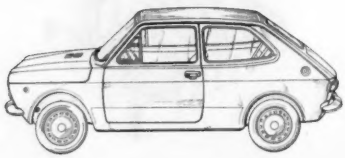
231,670
RAZOR BLADE DISPENSER
Donald M. Genaro, Haworth, N.J., and Clemens A. Iten, Staunton, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,221
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



231,671
FOLDING MOTORIZED VEHICLE
S. Albert Young, Birmingham, Mich., assignor to Harold J. Rineman, Southfield, and Richard Lynn Rineman, Brighton, Mich., fractional part interest to each
Filed Nov. 10, 1972, Ser. No. 305,498
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—1

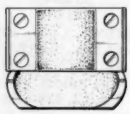


231,672
AUTOMOBILE
Gianpaolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,420
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D12—*08*
U.S. Cl. D12—91

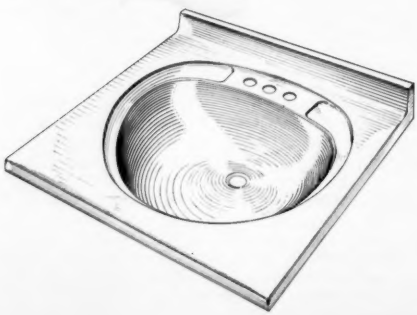


231,673
TIRE
Masahiro Nanpei, Takarazuka, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed July 27, 1972, Ser. No. 275,670
Claims priority, application Japan Feb. 3, 1972
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141

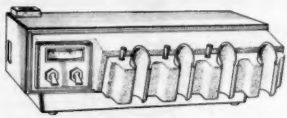
231,674
MOUNTING FOR A RIFLE TELESCOPIC SIGHT
Ivan Jimenez, Ypsilanti, and Irving Rubin, Oak Park, Mich. (both of 27367 Michigan Ave., Inkster, Mich. 48141)
Filed Jan. 29, 1973, Ser. No. 327,578
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



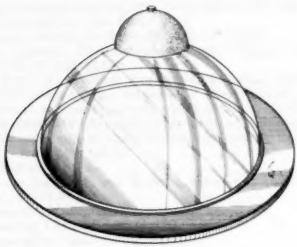
231,675
LAVATORY
Robert W. Fee, Evanston, Ill., assignor to Lawndale Industries, Inc.
Filed Jan. 12, 1973, Ser. No. 323,277
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



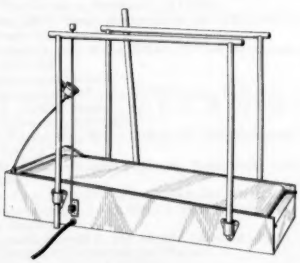
231,676
DENTAL CONTROL UNIT
Lawrence Emerson House II, Baltimore, Md., assignor to Litton Medical Products, Inc., Elk Grove Village, Ill.
Filed Mar. 8, 1973, Ser. No. 339,209
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1 B



231,677
COMBINED TABLETOP, AQUARIUM AND COVER THEREFOR OR SIMILAR ARTICLE
Robert Erik Miller, 11 Hidden Valley Road, Monrovia, Calif. 91016
Filed Jan. 17, 1972, Ser. No. 218,655
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—8



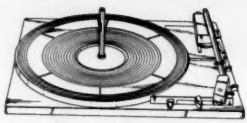
231,678
TREADMILL
Edward E. Trotter, 95 Marked Tree Road, Holliston, Mass. 01746
Filed Aug. 9, 1973, Ser. No. 386,954
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



231,679
LIGHTING FIXTURE
John Ansley Keller, Creamery, Pa., assignor to Heavy Light Mfg. Corp., Fairview Village, Pa.
Filed Mar. 7, 1973, Ser. No. 338,790
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B

231,680
OUTDOOR LIGHTING FIXTURE
John Ansley Keller, Creamery, Pa., assignor to Heavy Light Mfg. Corp., Fairview Village, Pa.
Filed Mar. 7, 1973, Ser. No. 338,789
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

231,681
RECORD PLAYER
Hanji Takahashi, Suita, and Ryoichi Takeoka, Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 31, 1972, Ser. No. 276,608
Claims priority, application Japan Jan. 31, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



231,682
SPORT BALL BAG
Emmy Lou Sacks, 166 Hillcrest Ave., Summit, N.J. 07901
Filed Aug. 24, 1971, Ser. No. 174,578
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF MAY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB St. Powercell, mesne: *See—*
Siwersson, Olle Lennart; and Tell, Karl Gunnar, 3,811,952.

Abar Corporation: *See—*
Cyrway, Edward N., Jr.; and Schmidt, Charles J., 3,812,276.

Abbe, Robert C., to Ade Corporation. Capacitive wire gauge. 3,812,424, Cl. 324-61.00r.

Abbey, Harold George. Electric-fluidic direct proportion converter. 3,811,465, Cl. 137-487.500.

Abbott Laboratories: *See—*
Liston, Max D., 3,811,780.

Abdullaev, Abakar Abakarovich. Probe for measuring characteristics of subsurface and ground water flow. 3,812,363, Cl. 250-388.000.

Abel, Irving R., to Honeywell, Inc. Wide field reflective optical apparatus. 3,811,749, Cl. 350-55.000.

Abildgaard, William H.; Groswith, Charles T. III; Deman, Heiko T.; and Buan, Danilo P., to Velo-Bind, Inc. Machine for binding books. 3,811,146, Cl. 11-1.00r.

Abler, Norman C., to Faustel, Inc. Pneumatic tension control system. 3,811,637, Cl. 242-75.430.

Abraham, Dennis G.; and McSparran, Ray A., to International Business Machines Corporation. Stepper motor control system using pulse injection for velocity overshoot control. 3,812,414, Cl. 318-696.000.

Abu-Saud, Munther, to ASG Industries Inc. Polariscope for determining stress in a transparent material. 3,811,775, Cl. 356-35.000.

Ackley, Donald M.: *See—*
Rosales, Joseph G., 3,811,742.

AcRite Industries, Inc.: *See—*
Thun, Leonard; and Grebow, Leon David, 3,811,489.

Adachi Plywood Co., Ltd.: *See—*
Handa, Takashi; and Saito, Minoru, 3,811,992.

Adahan, Carmeli. Rate of change of velocity control system. 3,811,526, Cl. 180-82.00r.

Adams, Harry A.; Kunchal, Kumar; and Callahan, James L., to Standard Oil Company, The. Removal of ammonia and organic impurities from an ammonia plant effluent. 3,812,236, Cl. 423-237.000.

Adams, Herbert J. F.; Kronberg, George H.; and Takman, Bertil H., to Astra Pharmaceutical Products, Inc. Acylxylidide local anaesthetics. 3,812,147, Cl. 260-326 300.

Adams, Samuel C.: *See—*
Keenan, Daniel J.; and Welzein, Norman F. (said Welzein assor. to), 3,811,417.

Addressograph-Multigraph Corporation: *See—*
Browning, Luther C., 3,811,880.

Ade Corporation: *See—*
Abbe, Robert C., 3,812,424.

Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., to United States of America, Navy. Bistatic passive radar. 3,812,493, Cl. 343-12.00r.

Afga-Gevaert Aktiengesellschaft: *See—*
Hackenbert, Hubert; and Zobel, Siegfried, 3,812,511.

Ageev, Leonid Matveevich: *See—*
Vydrin, Vladimir Nikolaevich; Ageev, Leonid Matveevich; and Sosjurko, Vladimir Georgievich, 3,811,307.

AGFA-Gevaert Aktiengesellschaft: *See—*
Wagensonner, Edward; Borowski, Jurt; and Stumpf, Frederick, 3,812,504.
Zahn, Wolfgang; and Huber, Hans-Peter, 3,811,768.

Agfa-Gevaert N.V.: *See—*
Vrancken, Marcel Nicolas, 3,811,773.

Agfe-Gevaert Aktiengesellschaft: *See—*
Engelsmann, Dieter; Wagensonner, Eduard; Rieder, Alois; and Von Fischern, Bernhard, 3,812,503.

Aghnides, Elie P. Spray producing device. 3,811,619, Cl. 239-428.500.

Agrophysic, Inc.: *See—*
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, 3,811,443.

Agrophysics, Inc.: *See—*
Dickinson, Ben W. O., III; Dickinson, Robert W.; and Miller, Cecil R. (said Dickinson, Ben W. O., III, and Dickinson, Robert W., assors. to), 3,811,424.
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, 3,811,423.

Ahlqvist, Stein Alexander Marcel. Tube wall. 3,811,478, Cl. 138-154.000.

Ahrano, Cary J., to Gulton Industries, Inc. Electrical switch with high pressure contacts. 3,812,309, Cl. 200-48.00a.

Ahrens, James M.: *See—*
Leonard, Ronald J.; and Ahrens, James M., 3,811,317.

Air Products and Chemicals, Inc.: *See—*
Moyer, Ronald C., 3,812,217.
Uffner, Melville W.; and Holland, Dewey G., 3,811,933.

Aisaka, Akira: *See—*
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.

Aisin Seiki Kabushiki Kaisha: *See—*
Sakakibara, Naoji, 3,811,418.

Aizawa, Hiroshi; and Ogiso, Matsutoshi, to Canon Kabushiki Kaisha. Electric control device for a camera. 3,812,510, Cl. 354-235.000.

Ajero, Fortunato S., to Hughes Co., Inc. Apparatus for orienting tapered articles. 3,811,550, Cl. 198-33.0aa.

Akase, Takeshi: *See—*
Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,135.

Akatsu, Mitsuhiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.

Akatsuka, Minoru: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,812,519.

Aker, John L., to Kustom Electronics, Inc. Special effect amplifier for electrical musical instruments. 3,812,278, Cl. 84-1.250.

Alar Engineering Corporation: *See—*
Doncer, Alex J.; and White, Harold R., 3,811,324.

Albright, Jay Donald; and Shepherd, Robert Gordon, to American Cyanamid Company. Methods of preparing 2-cyano-1-substituted-5-nitroimidazoles. 3,812,141, Cl. 260-309.000.

Aldred, Edward John, to Ransomes Sims & Jefferies Limited. Grass cutting or the like machines. 3,811,524, Cl. 180-6.200.

Allied Chemical Corporation: *See—*
Bostian, Logan C., 3,812,120.
Stone, Herman; Robertson, Arthur B.; and Tetenbaum, Marvin T., 3,812,066.
Vander Mey, John E., 3,812,020.
Weedon, Gene Clyde, 3,812,178.

Allis-Chalmers Corporation: *See—*
Hartwig, Walter J., 3,811,557.
Kemnitz, Robert H., 3,811,626.

Allison, James E.; and Boecker, Bob F., to General Electric Company. Treating agent dispenser for automatic washing machine. 3,811,600, Cl. 222-70.000.

Allison, William D., to Ford Motor Company. Energy absorbing steering column for motor vehicles. 3,811,337, Cl. 74-492.000.

Alsbury, Allan, to Lever Brothers Company. Toilet bars. 3,812,060, Cl. 252-555.000.

Alston, Robert B.: *See—*
Burnett, David B.; Alston, Robert B.; and Lim, Frank H., 3,811,501.

Aluminum Company of America: *See—*
Russell, Allen S.; Jarrett, Noel; Bruno, Marshall J.; and Remper, John A., 3,811,916.
Wilson, Richard C., 3,811,596.

Alza Corporation: *See—*
Heller, Jorge; and Baker, Richard W., 3,811,444.

Amano, Takehisa: *See—*
Tomisawa, Norio; Amano, Takehisa; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,812,478.

Amelio, Armand F., to United Aircraft Corporation. Engine air particle separator with fluid scavenge pump. 3,811,254, Cl. 55-306.000.

Amendolia, Pasquale J., to Motor Devices Corporation. Testing device for shock absorbers and the like. 3,811,316, Cl. 73-11.000.

American Cyanamid Company: *See—*
Albright, Jay Donald; and Shepherd, Robert Gordon, 3,812,141.
Chinai, Suresh Natvarlal; and Brigmainis, Edmund, 3,812,004.
Curran, William Vincent, 3,812,256.
English, Jackson Pollard; and Berkelhammer, Gerald, 3,812,189.
Feldman, Allan Murray, 3,812,080.
Martin, John Henry Edward James; and Kantor, Sidney, 3,812,249.
Nozik, Arthur Jack, 3,811,953.
Rauch, Francis Clyde; and Arzoumanidis, Gregory Gerasimos, 3,812,137.
Starer, Ira; Montgomery, Carroll Sherman; and O'Bara, Edward John, 3,812,194.
Weston, Norma Ann, 3,812,052.
Williams, Laurence Lyman; and Coscia, Anthony Thomas, 3,812,084.
Ziegler, William M., 3,812,188.

American Esna Corporation: *See—*
Morgan, Donald F., 3,811,211.

American Filtrona Corporation: *See—*

Berger, Richard M., 3,811,451.
American Plasticraft Company: *See—*
Simovits, Stephen S., Jr.; and Dumas, Christ J., 3,812,450.
American Standard Corporation: *See—*
Montgomery, Earl D., 3,811,229.
American Standard Inc.: *See—*
Anderson, Warren Gregory, 3,812,229.
Brinker, John H., 3,811,238.
Ametek, Inc.: *See—*
Valle, Howard C., 3,811,786.
Anaconda Company, The: *See—*
Barone, Angelo P.; D'Ascoli, Ralph G.; and Bechle, Charles W., 3,811,311.
Anaconda Company, The, mesne: *See—*
Burr, Harvey, 3,811,257.
Kothe, Erich W.; Ebel, Lawrence C.; and E'Ascoli, Ralph C., 3,812,283.
Andersen, Hans Christian: *See—*
Hahne, Eckhardt, 3,811,390.
Andersen, Poul H.; Povilaitus, Frank R.; and Himes, Robert S., to Chrysler Corporation. Impact velocity sensor switch with linearly movable controller. 3,812,312, Cl. 200-61.530.
Anderson, Daniel J., to Mallory, P. R., & Co. Electrolytes. 3,812,038, Cl. 252-62.200.
Anderson, James D.; and Cheh, Ernest L., to Burndy Corporation. Positive locking contact insertion and testing tool. 3,811,168, Cl. 29-203.00h.
Anderson, Warren Gregory, to American Standard Inc. Process for forming ceramic sanitary ware having a stone-like appearance. 3,812,229, Cl. 264-60.000.
Anderson, Wendell W.: *See—*
Apple, Willis, J.; and Anderson, Wendell W., 3,811,756.
Anderson, William H. Camping trailer. 3,811,723, Cl. 296-26.000.
Anderson, William T., to Do All Company. Tool changer. 3,811,179, Cl. 29-568.000.
Andress, Harry J., Jr.; and Ashjian, Henry, to Mobil Oil Corporation. Liquid hydrocarbon fuels. 3,811,847, Cl. 44-63.000.
Andrew, Dallas Roy: *See—*
Grae, Bernard Aron; and Andrew, Dallas Roy, 3,812,537.
Angelis, William J.; Berger, Robert E.; and Conkey, Robert E., to Goodyear Tire & Rubber Company, The. Combined piston-return mechanism. 3,811,366, Cl. 92-130.000.
Anouchi, Abraham Y. Time-interval rate meter for time measuring devices and method for checking time pieces. 3,811,314, Cl. 73-6.000.
Antolelic Industries, Ltd.: *See—*
Purchase, F. Jack, 3,812,486.
Aono, Shunji: *See—*
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.
Apple, Willis, J.; and Anderson, Wendell W. Dual image refraction testing device. 3,811,756, Cl. 351-17.000.
Applied Photo Sciences, Inc., mesne: *See—*
Wyckoff, Charles W., 3,812,507.
Aprahamian, Robert: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Aprahamian, Robert; and Jacoby, Jerold L., 3,812,454.
Apstein, Maurice. Programmed venous assist pump. 3,811,431, Cl. 128-64.000.
Arai, Hiroshi: *See—*
Nakamura, Akira; Arai, Hiroshi; and Ohta, Jun, 3,811,739.
Arai, Tomiji: *See—*
Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, 3,811,726.
Archer Daniels Midland Company: *See—*
Atkinson, William T., 3,812,267.
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., to Westinghouse Electric Corporation. Method for producing refractory metal members by vapor deposition, and resulting product. 3,811,936, Cl. 117-217.000.
Argoudelis, Alexander D.; and Coats, John H., to Upjohn Company, The. Process for preparing lincomycin. 3,812,014, Cl. 195-80.00r.
Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., to Upjohn Company, The. N-demethylcelesticetin derivatives. 3,812,096, Cl. 260-210.00r.
Ariyama, Kenzo; Muramatsu, Shigeru; and Namiki, Ryoichi, to Ricoh Co., Ltd. Powder image fixing device for xerographic copying apparatus and method. 3,811,821, Cl. 432-8.000.
Arkansas Rock and Gravel Co.: *See—*
Holland, John H., 3,811,602.
Armstrong, Alvin P., to Kolob Holding Limited. Vertical lift trailer. 3,811,697, Cl. 280-43.180.
Armstrong, W. G., Sir, Whitworth & Company (Engineers) Limited: *See—*
Tryhorn, Donald Wilfred, 3,811,807.
Arnault, Warren J. Pipe hanger. 3,811,644, Cl. 248-56.000.
Arnold, James T., to Varian Associates. Membrane, gas separator with means for removing water vapor. 3,811,319, Cl. 73-23.000.
Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Gas washing device with reversing spray paths. 3,811,249, Cl. 55-84.000.
Arova Schaffhausen AG: *See—*
Villiger, Felix; and Gerber, Albert, 3,811,480.
Arthur, Allen, Co., Inc.: *See—*
Bretton, Cal, 3,811,453.
Artisan Industries, Inc.: *See—*
Cherenson, Edward L., 3,811,822.
Artwick, Kert Edward; and O'Neil, Robert Anthony, to Hanson Scale Company. Bathroom scale. 3,811,523, Cl. 177-180.000.
Arzoumanidis, Gregory Gerasimos: *See—*
Rauch, Francis Clyde; and Arzoumanidis, Gregory Gerasimos, 3,812,137.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nakajima, Tohru; and Marui, Masatoshi, 3,812,497.
Asahina, Michio: *See—*
Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,811,876.
ASG Industries Inc.: *See—*
Abu-Saud, Munther, 3,811,775.
Ashjian, Henry: *See—*
Andress, Harry J., Jr.; and Ashjian, Henry, 3,811,847.
Ashland Oil, Inc.: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,812,220.
Asselman, George Albert Apolonia; and Dirne, Adrianus Petrus, to U.S. Philips Corporation. Heat transfer device. 3,811,496, Cl. 165-105.000.
Astra Pharmaceutical Products, Inc.: *See—*
Adams, Herbert J. F.; Kronberg, George H.; and Takman, Bertil H., 3,812,147.
Aten, Albert Christiaan; Van Santen, Gerrit; and Renirie, Fredericus Hendricus Ignatius, to U.S. Philips Corporation, mesne. Photosensitive device with connection electrodes on major surface and floating electrode on opposite surface. 3,812,346, Cl. 250-21.00r.
Atkinson, William T., to Archer Daniels Midland Company. Extruded proteinaceous materials. 3,812,267, Cl. 426-104.000.
Atlantic Research Corporation: *See—*
Henderson, Charles B., 3,811,970.
Atlantic Richfield Company: *See—*
Curtin, Daniel J., 3,811,614.
Atlas Copco Aktiebolag: *See—*
Blomberg, Jarl Joel; Elmessaar, Heino; and Karden, Karl Gosta, 3,811,514.
Aubert, Emilien; and Des Rosiers, Jacques. Antifungal suppository and method of treating fungus infestations. 3,812,250, Cl. 424-148.000.
Augustine, Frank B. Cone spray nozzle and method for making the same. 3,811,621, Cl. 239-520.000.
Aulenbach, Grant M.: *See—*
Goda, Kermit J., Jr.; and Aulenbach, Grant M., 3,811,875.
Aumuller, Walter: *See—*
Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,812,185.
Austin, Robert R.; and Creighton, David M., to International Telephone and Telegraph Corporation. Apparatus for the concentration reduction of a gas stream. 3,811,253, Cl. 55-270.000.
Automated Building Components, Inc.: *See—*
Jureit, John Calvin; and Castillo, Adolfo, 3,811,578.
Automation Equipment, Inc.: *See—*
Swoager, Jon R., 3,811,290.
Automobiles Peugeot: *See—*
Castarede, Armand, 3,811,333.
Avampato, Dominic C.; Dibella, Robert N.; and Vasas, Roger E. Biochemical fuel cell and method of operating same. 3,811,950, Cl. 136-86.00e.
Avco Corporation: *See—*
Hill, Charles E.; and Brobeck, William R., 3,812,458.
Avins, Jack, to RCA Corporation. Television receiver using synchronous video detection. 3,812,289, Cl. 178-7.30r.
Avramidis, Stellios A.: *See—*
Brown, Martin S.; and Avramidis, Stellios A., 3,811,332.
Baaso, George L., to United States of America, Army, The. Trailer hitch. 3,811,708, Cl. 280-433.000.
Babbitt, John M.; Spayd, Richard W.; and Irani, Nayyir F., to Eastman Kodak Company. Method for increasing the viscosity of dilute photographic emulsions and elements prepared thereby. 3,811,897, Cl. 96-114.000.
Babcock & Wilcox Company, The: *See—*
Ferraro, John J.; and McDonald, Bertrand Norval, 3,811,498.
Bach & Co.: *See—*
Sturm, Hermann, 3,812,452.
Back, Karl Johan, to Oy Cyklop AB. Sealing tongs. 3,811,481, Cl. 140-93.200.
Back, Karl Johan; and Walhelm, Ragnar Ilmari Olof, to Oy Cyklop AB. Stealing tongs. 3,811,482, Cl. 140-93.400.
Bacon, James F., to United Aircraft Corporation. Non-toxic invert analog glass compositions of high modulus. 3,811,901, Cl. 106-50.000.
Bader, Henry; and Chiang, Yunn H., to Polaroid Corporation. Process for the preparation of 1,8-naphthaldehydic acid. 3,812,115, Cl. 260-343.20r.
Bader, Henry; Feingold, Michael; and Jahngen, Edwin G., Jr., to Polaroid Corporation. Process for producing developers for silver halide image patterns. 3,812,191, Cl. 260-590.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Glaser, Rudolf; Schmidtchen, Juergen; and Bauer, Peter, 3,812,207.
Tatzel, Hermann; and Beck, Gilbert, 3,812,062.
Baer, Robert B.: *See—*
Weinstein, Martin; Speirs, Kenneth K.; and Baer, Robert B., 3,811,959.

Bafford, Richard Anthony: *See—*
Sheppard, Chester Stephen; MacLeay, Ronald Edward; and Bafford, Richard Anthony, 3,812,095.

Bagby, John P.: *See—*
Hapke, Kenyon A.; and Bagby, John P., 3,811,612.

Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, to Smithkline Corporation. Methods and compositions for improving the feed intake of meat producing animals. 3,812,255, Cl. 424-244.000.

Bakal, Abraham: *See—*
Corey, Harold; Bakal, Abraham; Konigsbacher, Kurt; and Schoenholz, Daniel, 3,812,268.

Baker, Bob Jim: *See—*
Tink, Robert MacMillan; and Baker, Bob Jim, 3,812,292.

Baker, Eugene E.: *See—*
Morrisett, O. L.; and Baker, Eugene E., 3,811,500.

Baker, Lamar T., to General Instrument Corporation. Parasitic transistor shift register. 3,812,520, Cl. 357-41.000.

Baker, Raymond J. Replaceable game table rail. 3,811,673, Cl. 273-9.000.

Baker, Richard W.: *See—*
Heller, Jorge; and Baker, Richard W., 3,811,444.

Baker, Robert G.; and Reighard, Alan B., to Nordson Corporation. Thermoplastic dispenser system. 3,811,405, Cl. 118-2.000.

Bald, James F., Jr.: *See—*
Funke, Maurice F.; and Bald, James F., Jr., 3,812,368.

Bald, James F., Jr., to United States of America, Army. Inorganic thermal reaction battery. 3,811,948, Cl. 136-83.00t.

Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Trisubstituted imidazoles. 3,812,136, Cl. 260-294.900.

Ballin, Gene. Separable interlocking fasteners and method of making them. 3,811,156, Cl. 24-201.00c.

Ballu, Louis, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Floating anti-pollution barrier device. 3,811,285, Cl. 61-1.00f.

Baltes, Hans. Method and drying closet for drying laundry and the like. 3,811,198, Cl. 34-24.000.

Baltimore and Ohio Railroad Company, The: *See—*
Schmidt, Joseph J., 3,812,325.

Balzer & Droll KG: *See—*
Muskulus, Willi; and Kramer, Willi, 3,811,630.

Banks, Ronald Eric; and Haszeldine, Robert Neville, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Polyfluoropolymers. 3,812,206, Cl. 260-890.000.

Bantam Steam Company, Inc.: *See—*
Minton, Richard L., 3,811,414.

Baran, John S.; and Pitzele, Barnett S., to Searle, G. D., & Co. Ammonium salts of 3β-(2-O-β-D-glucopyranuronosyl-α-D-glucopyranuronosyl)oxy) olen-12-en-30-oic acid. 3,812,097, Cl. 260-210.00r.

Barber-Greene Company: *See—*
Beaty, Ronald W.; and Martenson, Earl D., 3,811,787.

Bareggi, Vittorio: *See—*
Barilli, Filippo; Cozza, Giorgio; and Bareggi, Vittorio, 3,812,242.

Barilli, Filippo; Cozza, Giorgio; and Bareggi, Vittorio, to Societa Italiana Resine S.p.A. Process for the simultaneous production of sulphur dioxide and concentrated aqueous sulphuric acid. 3,812,242, Cl. 423-530.000.

Barkan, Philip; Kelley, Fred W., Jr.; and Shook, Theodore A., to General Electric Company. Increasing the initial flow rate in a rectifier assembly employing electromagnetically-pumped liquid metal for cooling. 3,812,404, Cl. 317-234.00r.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Mayer, Manfred; and Maydowski, Reinhard, 3,811,631.

Barnhart, Morris W.: *See—*
Walsh, Charles J.; and Barnhart, Morris W., 3,812,288.

Barone, Angelo P.; D'Ascoli, Ralph G.; and Bechle, Charles W., to Anaconda Company, The. Making flat copper-clad steel wire. 3,811,311, Cl. 72-278.000.

Barraclough, Christopher George; and Brown, James Roger, to GEC-Elliott Automation Limited. Raster-scanned display devices. 3,812,491, Cl. 340-324.0ad.

Barrera, Salvatore E., to Wilkes Pool Corporation. Adapter. 3,811,712, Cl. 285-132.000.

Barrett, Hillard E.; Clark, Donald B.; and Seid, Bernard, to United States of America, Army, mesne. Fluid-tight high temperature flexible joint. 3,811,713, Cl. 285-226.000.

Barrett, James H., to Rohm & Haas Company. Method of preparing anion exchange resins with sulfuryl chloride. 3,812,061, Cl. 260-2.10e.

Barringer, Hulbert V.: *See—*
Gravlee, Leland C.; and Barringer, Hulbert V., 3,811,449.

Barthel, Ray L. Mini-bike two-speed planetary transmission with stationery ring, carrier output and novel clutching means. 3,811,342, Cl. 74-750.00r.

Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., to Corning Glass Works. Degradable glass suitable for containers. 3,811,853, Cl. 65-23.00.

Barton, Henry W.; and Cloud, Robert, to Unimac Company, Inc. Spray rinse device for washer-extractor. 3,811,300, Cl. 68-12.00r.

Barton, Sterling C.; and Schmitt, Nickolas, to General Electric Company. Composite armature core for dynamoelectric machine. 3,812,392, Cl. 310-259.000.

Basch, Harold I.: *See—*
Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., 3,812,110.

BASF Wyandotte Corporation: *See—*
Lengsfeld, Wolfgang, 3,812,122.

Bassett, Kirk W. Core chucks. 3,811,632, Cl. 242-46.400.

Bassett, Max, to Shields, C. Nelson, Jr.; trustee. Methods of grouting offshore structures. 3,811,289, Cl. 61-46.000.

Batcher, Kenneth E., to Goodyear Aerospace Corporation. Permutation network. 3,812,467, Cl. 340-172.500.

Bateman, Robert F.: *See—*
Eckdahl, Thomas H.; and Bateman, Robert F., 3,811,595.

Bateman, Robert F., to Plastics, Inc. Tray. 3,811,566, Cl. 206-509.000.

Bates, Wayne C., to Truth Incorporated. Sash lock. 3,811,718, Cl. 292-241.000.

Batsch, Guy, to Societe Civile Textile dite: Socitex. Twisting device for filaments, especially for textile filaments. 3,811,258, Cl. 57-34.0hs.

Batson, William A.: *See—*
Seely, Robert W.; and Batson, William A., 3,811,361.

Battelle-Institut e.V.: *See—*
Hartmann, Rudolf; and Zimmermann, Horst, 3,811,283.

Bauer, Benjamin B., to Columbia Broadcasting Systems, Inc. Quadraphonic reproducing system with gain riding logic. 3,812,295, Cl. 179-1.0gq.

Bauer, David J., to Ford Motor Company. Latch and anti-rattle clip. 3,811,725, Cl. 296-66.000.

Bauer, Donald J.; Lindstrom, Roald W.; and Schultze, Lawrence E., to United States of America, Interior. Solvent extraction procedure for separating samarium from neodymium. 3,812,232, Cl. 423-21.000.

Bauer, Peter: *See—*
Glaser, Rudolf; Schmidtchen, Juergen; and Bauer, Peter, 3,812,207.

Bauer, Peter; and Bowles, Romald E., to Bowles Fluidics Corporation. Miniaturized fluidic element and circuit construction. 3,811,474, Cl. 137-833.000.

Bauer, Robert; Rosenfield, Richard Gordon; and Rupe, Chauncey Orvis, to Miles Laboratories, Inc. Test device for detecting low concentrations of substances in fluids. 3,811,840, Cl. 23-253.0tp.

Baumann, Bernard. Method of manufacturing tanks for liquids. 3,811,173, Cl. 29-460.000.

Baumann, Rudolf: *See—*
Lesk, Adolf; Baumann, Rudolf; and Link, Otmar, 3,811,248.

Baus, Rene, Jr.; and Epstein, Lewis. Camera. 3,811,770, Cl. 355-67.000.

Baxter Laboratories, Inc.: *See—*
Leonard, Ronald J.; and Ahrens, James M., 3,811,317.
Lowy, George W., 3,811,781.
Skinner, Charles A., 3,812,321.

Bay, Otto. Clamping holder for a cutting tool. 3,811,162, Cl. 29-96.000.

Bayer Aktiengesellschaft: *See—*
Boehmke, Gunther; and Schmitt, Ernst, 3,812,107.
Brack, Alfred; and Gomm, Walter, 3,812,108.
Braden, Rudolf; Hendricks, Udo; Oertel, Gunter; and Schliebs, Reinhard, 3,812,221.
Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,812,142.
Schafer, Heinrich; and Nieder-Vahrenholz, Hans Georg, 3,812,234.
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,812,085.

Bazhal, Anatoly Ignatievich; Mishkin, Alexandr Ilich; and Bessarab, Anatoly Antonovich. Percussive drilling machine. 3,811,515, Cl. 173-93.000.

Beasley, Robert W., to Nelson, Ted, Company. Form for portable concrete building module. 3,811,646, Cl. 249-144.000.

Beason, Lew R.: *See—*
Hill, William E.; and Beason, Lew R., 3,811,966.

Beati, Enrico: *See—*
Natta, Giulio; Beati, Enrico; Severini, Febo; and Toffano, Silvio, 3,812,204.

Beaty, Ronald W.; and Martenson, Earl D., to Barber-Greene Company. Screed attached grade reference mechanism. 3,811,787, Cl. 404-84.000.

Beaumont, Alan: *See—*
Stone, Wayne B., Jr.; and Beaumont, Alan, 3,812,538.

Bechle, Charles W.: *See—*
Barone, Angelo P.; D'Ascoli, Ralph G.; and Bechle, Charles W., 3,811,311.

Beck, Alexander. Facet grinding apparatus. 3,811,230, Cl. 51-127.000.

Beck, Gilbert: *See—*
Tatzel, Hermann; and Beck, Gilbert, 3,812,062.

Becker, Otto Alfred. Insulating flexible composite element. 3,811,239, Cl. 52-406.000.

Becton, Dickinson and Company: *See—*
Fowler, James McFarland, Jr., 3,811,250.
Gravlee, Leland C.; and Barringer, Hulbert V., 3,811,449.
Miller, Jack, 3,812,425.

Bednar, Ladislav: *See—*
Stefek, Oldrich; Triska, Vojtech; and Bednar, Ladislav, 3,811,310.

Behrendt, Lothar: *See—*
Schorr, Manfred; Durchkeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,812,131.

Bell & Howell Company: *See—*
Berk, Walter E.; and Kulykivsky, Gregory H., 3,812,513.

Haake, Robert, 3,811,685.
Hapke, Kenyon A.; and Bagby, John P., 3,811,612.
Wagner, Everett F.; Sidlo, Joseph J.; and Ruschke, Lawrence J., Jr., 3,812,307.
Bell Company, Inc., The: *See*—
Mansnerus, John A.; and Dombrowski, Ted A., 3,811,817.
Bell, Gunter: *See*—
Wehner, Karl-Heinz; Bell, Gunter; and Watermann, Willy, 3,811,288.
Bell, Lon E.; and Gruber, William B., to Technar, Incorporated. Ball actuated inertia switch. 3,812,308, Cl. 200-61.45r.
Bell Telephone Laboratories, Incorporated: *See*—
Dittrich, Robert George; Secord, Dean Brian; and Thelemaque, Louis Emanuel, 3,812,298.
Dunkleberger, La Rue Norman; and Shen, Lawrence Yun Lung, 3,811,794.
Hanson, Robert Louis, 3,812,432.
Hayashi, Izuo, 3,812,516.
Kish, Donald Eugene; and Smith, James Lanson, 3,812,480.
Lesh, Nathan George; O'Day, Peter Joseph; and Unger, Burton Abram, 3,811,973.
Ostapiak, Roman; and Scuderi, Rudolph, 3,812,435.
Pedersen, Thomas Josef, 3,812,294.
Ramaswamy, Vellayan, 3,811,912.
Bellamy, Winthrop D.; and Chakrabarty, Anada M., to General Electric Company. Soluble cellulase enzyme production. 3,812,013, Cl. 195-66.00r.
Bellmer, Friedrich O., to Fedders Corporation. Compressor valve assembly. 3,811,468, Cl. 137-512.150.
Beltone Electronics Corporation: *See*—
Brander, Richard; and Weiss, Erwin M., 3,812,300.
Bender, Newell R.: *See*—
Larson, William M.; and Bender, Newell R., 3,812,003.
Bendix Corporation, The: *See*—
Coman, William E., 3,812,378.
Eifler, Raymond J.; and Hennessey, Walter F., 3,812,447.
Gollomp, Bernard P., 3,812,334.
Goodrich, George W., 3,812,490.
Seelig, Frederick A., 3,811,665.
Benesch, Frederick E. Bingo card holder. 3,811,680, Cl. 273-136.00g.
Benge, Donald. Warfare game. 3,811,679, Cl. 273-131.0bb.
Bennett, Charles L.: *See*—
Frederick, Norman L.; and Bennett, Charles L., 3,811,163.
Bennett, Donald Alfred, to International Synthetic Rubber Company Limited, The. Polymerisation of vinyl aromatic compounds. 3,812,088, Cl. 260-93.50r.
Benson, Jack O.: *See*—
Tucker, Raymond Z.; and Benson, Jack O., 3,811,706.
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., to Cutters Machine Company, Inc. Electrically controlled cloth spreading machine. 3,811,669, Cl. 270-31.000.
Benz, Mark G., to General Electric Company. Large grain cobalt-samarium intermetallic permanent magnet material stabilized with zinc and process. 3,811,962, Cl. 148-103.000.
Berger, Richard M., to American Filtrona Corporation. Tobacco smoke filter. 3,811,451, Cl. 131-10.00r.
Berger, Robert E.: *See*—
Angelis, William J.; Berger, Robert E.; and Conkey, Robert E., 3,811,366.
Berk, Walter E.; and Kulykivsky, Gregory H., to Bell & Howell Company. Photographic shutter. 3,812,513, Cl. 354-263.000.
Berkeley Applied Research Corporation: *See*—
Neale, Robert E.; Wilhelmsen, Paul C.; and Winterhalter, David R., 3,811,682.
Berkelhammer, Gerald: *See*—
English, Jackson Pollard; and Berkelhammer, Gerald, 3,812,189.
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, to Schering Aktiengesellschaft. 18-Methyl-5α-H-androstane derivatives and process of making the same. 3,812,165, Cl. 260-397.400.
Bertin, Daniel; Perronnet, Jacques; and Teche, Andre, to Roussel-UCLAF. Novel tetrahydropyrimidines. 3,811,863, Cl. 71-92.000.
Bertrand, Gerard; Perroud, Paul; and Sylvestre-Baron, Martial, to Commissariat a l'Energie Atomique. Pressurized electrolyzer including gas product-electrolyte separating means. 3,812,026, Cl. 204-270.000.
Bertrand, Yves; and Grebert, Robert, to Eta Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Delegation Ministerielle pour l'Armement Quai Henri. Fuse powder composition. 3,811,969, Cl. 149-20.000.
Bertsch, Hermann. Method of making stone reliefs. 3,811,909, Cl. 117-8.500.
Besozzi, Alfio J.; Cooley, Stone D.; and Potts, Fred E., III, to Petro-Tex Chemical Corporation. Preparation of dihydrofuran from 3,4-epoxy-1-butene, 3,4-dihydroxy-1-butene, or 1,3-dihydroxy-2-butene. 3,812,158, Cl. 260-346.10r.
Bessarab, Anatoly Antonovich: *See*—
Bazhal, Anatoly Ignatievich; Mishkin, Alexandr Ilich; and Bessarab, Anatoly Antonovich, 3,811,515.
Bethlehem Steel Corporation: *See*—
Saylor, William H., Jr., 3,811,305.
Bettinger, James H., to United Fabricating Company, Inc., mesne. Raised floor panel and assembly. 3,811,237, Cl. 52-126.000.
Bey, Alvin E., to Dow Corning Corporation. Textile finishing composition and process. 3,812,201, Cl. 260-824.00r.
Beyer, Harry A.: *See*—
Gangelhoff, Fred R.; and Beyer, Harry A., 3,811,226.
Bhuta, Pravin G.; Johnson, Robert L.; Aprahamian, Robert; and Jacoby, Jerold L., to TRW Inc. Low frequency parametric acousto-optical emaging method and apparatus. 3,812,454, Cl. 340-3.00r.
Bianchi, Massimo; and Conti, Gianni, to Billi, G., & C. S.p.A. Circular knitting machine with jack removal slots. 3,811,296, Cl. 66-8.000.
Bickford, John C., to Hydraulic Systems, Inc. Piston pump with self-lubrication pistons. 3,811,798, Cl. 417-269.000.
Bieler, Barrie H.; Morgan, David C.; and Guebert, Kenneth W., to Dow Chemical Company, The. Basic oxygen process using a sodium hydroxide reaction product flux. 3,811,870, Cl. 75-52.000.
Bilinski, Donald J.; and Weisbord, Leon, to Singer Company, The, mesne. Method of manufacturing flexure hinge assembly. 3,811,172, Cl. 29-445.000.
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, to Singer Comapny, The. Thermal shield. 3,811,493, Cl. 165-32.000.
Billi, G., & C. S.p.A.: *See*—
Bianchi, Massimo; and Conti, Gianni, 3,811,296.
Bimba, Charles W. Fluid power cylinder construction. 3,811,367, Cl. 92-165.000.
Bio-Logics Systems, Inc.: *See*—
Mahood, James A., 3,812,472.
Birchmeier, Hans P.: *See*—
Hauck, Erwin A.; Birchmeier, Hans P.; and Kim, Dongsung R., 3,812,469.
Wollum, James E.; Birchmeier, Hans P.; and Sharp, Richard S., 3,812,468.
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich. Mill for manufacture of plaster concrete articles. 3,811,812, Cl. 425-21.000.
Bissing, Donald E.: *See*—
Gash, Virgil W.; and Bissing, Donald E., 3,812,183.
Black, David F. Mechanized van loading and unloading apparatus and system. 3,811,579, Cl. 214-38.00d.
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis. Method of producing a flat top slab of foamed polyurethane. 3,812,227, Cl. 264-54.000.
Blais, Leo: *See*—
Wilkinson, Michael C.; Blais, Leo; Martin, Wilhelm N.; and Tesainer, Silvano, 3,811,987.
Blake, David E., to Electroprint, Inc. Contact-transfer electrostatic printing system. 3,811,765, Cl. 355-3.00r.
Blankenstein, Gunter: *See*—
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,812,085.
Blatt, Leland F. Air blow gun for chip and debris cleaning. 3,811,622, Cl. 239-526.000.
Blau, Henry H., Jr., to Environmental Research & Technology, Inc. Gas analyzer. 3,811,776, Cl. 356-51.000.
Bleha, William P., Jr.: *See*—
Braunstein, Morris; and Bleha, William P., Jr., 3,811,180.
Blomberg, Jarl Joel; Elmessaar, Heino; and Karden, Karl Gosta, to Atlas Copco Aktiebolag. Pressure fluid operated tool. 3,811,514, Cl. 173-65.000.
Blossom, James H.: *See*—
Crossland, Edward J.; Blossom, James H.; and Krasin, Lester O., 3,812,462.
Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 3,811,176.
Bobst, J., & Fils, S.A.: *See*—
Preisig, Roland, 3,811,549.
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Intermediates in the preparation of secretin. 3,812,092, Cl. 260-112.500.
Boecker, Bob F.: *See*—
Allison, James E.; and Boecker, Bob F., 3,811,600.
Boegehold, Richard A. System of constructing display racking and shelving. 3,811,575, Cl. 211-148.000.
Boehmke, Gunther; and Schmitt, Ernst, to Bayer Aktiengesellschaft. β-Hydroxyalkylated hydrazone dyestuffs. 3,812,107, Cl. 260-240.00g.
Boeing Company, The: *See*—
Schut, Hendrik P., 3,811,313.
Boelens, Harmannus: *See*—
De Rijke, David; and Boelens, Harmannus, 3,812,059.
Bohm, Walter, to Zimmer, Peter. Rotary screen printing with internally driven roller squeegee. 3,811,378, Cl. 101-120.000.
Boldebuck, Edith M., to General Electric Company. Making aqueous solvent mixtures of alkali metal salt of polyamide acid. 3,812,069, Cl. 260-29.20m.
Boldyrev, Mikhail Vsevolodovich: *See*—
Zabolotsky, Grigory Mikhailovich; Rakovsky, Vladimir Mikhailovich; Shuster, Sergei Alexandrovich; and Boldyrev, Mikhail Vsevolodovich, 3,811,166.
Bolesky, Richard C., to Uniroyal, Inc. Mobile body and method of making same. 3,811,721, Cl. 296-28.00r.
Bolger, Joseph. Impact turning tool. 3,811,517, Cl. 173-93.700.
Bollman, Robert L.: *See*—
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich;

Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna. Method of producing rolled porous glss-ceramic material. 3,811,852, Cl. 65-22.000.

Bonola, Giuseppe; and Sianesi, Enrico, to Recordati SA Chemical and Pharceutical Company. Process for preparing lower alkyl flavone-7-oxyacetates. 3,812,156, Cl. 260-345.200.

Bonuchi, James A.: *See—*
Scheier, Donald J.; and Bonuchi, James A., 3,811,555.

Boonie Pad Co., Inc.: *See—*
Borgren, Peter M., 3,812,320.

Borbas, Robert A., to GTE Automatic Electric Laboratories, Incorporated. Bus control arrangement for a communication switching system. 3,812,297, Cl. 179-18.0es.

Borchardt, Hans J., to Du Pont de Nemours, E. I., and Company. Heat transfer fluids. 3,812,040, Cl. 252-68.000.

Borgren, Peter M., to Boonie Pad Co., Inc. Heated ground cover for the dissipation of moisture. 3,812,320, Cl. 219-213.000.

Borisevich, Vitaly Arkadievich: *See—*
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich, 3,811,812.

Borowski, Jurt: *See—*
Wagensonner, Edward; Borowski, Jurt; and Stumpf, Frederick, 3,812,504.

Bors, Hans: *See—*
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,811,834.

Bosch, Robert, G.m.b.H.: *See—*
Eckert, Konrad; and Knapp, Heinrich, 3,811,419.
Stedtnitz, Wolfgang, 3,812,481.
Vogel, Wilhelm, 3,811,420.

Bosch, Robert, Photokino GmbH: *See—*
Krumbein, Fritz, 3,811,761.
Riedel, Wolfgang, 3,811,758.
Rube, Helmut; and Krumbein, Fritz, 3,811,760.

Bossen, Douglas C.; Haugh, Connor F.; and Hsiao, Mu-yue, to International Business Machines Corporation. Dynamic address translation scheme using orthogonal squares. 3,812,336, Cl. 235-153.0am.

Bostian, Logan C., to Allied Chemical Corporation. Trisubstituted-s-triazines. 3,812,120, Cl. 260-249.800.

Boston, Ray W., Jr.; and Potts, Larry D., to General Electric Company. Room air conditioner mounting arrangement. 3,811,370, Cl. 98-94.000.

Bouldoires, Jean-Pierre, to Societe d'Assistance Technique pour Produits Nestle S.A. Freeze-drying apparatus. 3,811,199, Cl. 34-92.000.

Bouniot, Albert, to Melle-Bezons. Process for preparing primary furfuryl amines. 3,812,161, Cl. 260-347.700.

Boustany, Kamel; and D'Amico, John J., to Monsanto Company. N,N-di(2-Benzothiazolyl)sulfenamides useful as vulcanization activators. 3,812,139, Cl. 260-305.000.

Bowen, Brian Francis: *See—*
Needham, Victor; and Bowen, Brian Francis, 3,812,019.

Bowerman, Leonard E., to Oster Corporation. Hair clipper with improved blade driving means. 3,812,389, Cl. 310-50.000.

Bowles Fluidics Corporation: *See—*
Bauer, Peter; and Bowles, Romald E., 3,811,474.

Bowles, Romald E.: *See—*
Bauer, Peter; and Bowles, Romald E., 3,811,474.

Bowman, Lloyd D.; Karhade, Manohar G.; and Schneiderman, Daniel I., to Dasibi Corporation. Automatic calibration circuit for gas analyzers. 3,812,330, Cl. 235-92.0cc.

Boyer, Fred S. Locking assembly. 3,812,281, Cl. 174-53.000.

Boylan, John R.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.

Boyle, John M.: *See—*
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,812,493.

Braber, Robert J., to Lehigh Press, Inc., The. Container construction. 3,811,564, Cl. 206-469.000.

Brachet, Jacques. Traction apparatus for a stretcher. 3,811,433, Cl. 128-84.00c.

Brack, Alfred; and Gomm, Walter, to Bayer Aktiengesellschaft. Cationic dyestuffs, their manufacture and use. 3,812,108, Cl. 260-240.900.

Bradbury, William B.; and Rothschmitt, Anton J., to Plastic Molders Supply Co., Inc. Apparatus for introducing controlled amounts of pigment into thermomechanically formed plastic. 3,811,627, Cl. 241-281.000.

Braden, Rudolf; Hendricks, Udo; Oertel, Gunter; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Preparation of ω-amino-alkane phosphonic and phosphinic acid derivatives. 3,812,221, Cl. 260-968.000.

Bradley, Frank R. Frequency difference measuring and compensating circuit. 3,812,433, Cl. 328-155.000.

Bragaglia, Giorgio; and Grossi, Francesco. Machine for forming containers, trays and the like out of corrugated cardboard or similar. 3,811,368, Cl. 93-55.000.

Brander, Richard; and Weiss, Erwin M., to Beltone Electronics Corporation. Receiver assembly incorporating acoustical enclosure for receiver. 3,812,300, Cl. 179-107.00r.

Brandom, Boyce: *See—*
Killen, Richard J.; Brandom, Boyce; and Howard, Lyman S., 3,811,244.

Brandt, Michael W. Light for chemical sprayer. 3,812,340, Cl. 240-2.0fd.

Branick Manufacturing Company: *See—*
Castoe, John H., 3,811,654.

Brattle Instrument Corporation: *See—*
Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,811,428.

Braukmann, Heinrich. Indicator device for rotary elements. 3,811,403, Cl. 116-125.000.

Braunstein, Morris; and Bleha, William P., Jr., to Hughes Aircraft Company. Method of manufacture of liquid crystal device. 3,811,180, Cl. 29-572.000.

Brearley, Donald William, to International Business Machines Corporation. Cyclically rotatable eccentric pivot for ribbon reverse lever. 3,811,547, Cl. 197-165.000.

Brecher, Lee E.: *See—*
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., 3,811,936.

Brendel, Gottfried J.: *See—*
Niebylski, Leonard M.; and Brendel, Gottfried J., 3,811,972.

Brenneke, Arthur M., to TRW Inc. Plastics filled piston ring. 3,811,692, Cl. 277-231.000.

Brenneman, J. Edward; and Waters, Robert S., to Schick Incorporated. Shaver with removable head. 3,811,188, Cl. 30-34.00r.

Bretschneider, Hermann; Klotzer, Wilhelm; and Franzmair,, to Hoffmann-La Roche Inc. N-(3,3-diphenyl-3-cyanopropyl)-ureas. 3,812,170, Cl. 260-465.00d.

Brette, Yves-Jean Francois: *See—*
Rousseau, Hubert Cecyl Albert; and Brette, Yves-Jean Francois, 3,812,534.

Bretton, Cal, to Arthur, Allen, Co., Inc. Method and means for attaching a hair supplement. 3,811,453, Cl. 132-53.000.

Breuer, Hermann, to Squibb, E. R., & Sons, Inc. 6-[(3,5,7-Triaza-l-azonia-l-adamantyl)-acetamido]-penicillanic acid halides and sulfonates. 3,812,100, Cl. 260-239.100.

Brewster, Robert W.: *See—*
Warren, Lyle D.; and Brewster, Robert W., 3,811,487.

Brezosky, Bernard J.: *See—*
Butsch, Richard L.; and Brezosky, Bernard J., 3,811,746.

Bridges, Thomas F.; Lalangas, Petros; and Sjostrom, Carl H., to McMullen, John J., Associates, Inc. Double well cargo tank having insulating secondary barrier. 3,811,593, Cl. 220-9.0lg.

Briggs, Philip Stanley, to National Research Development Corporation. Tanning improvements. 3,811,832, Cl. 8-94.260.

Brigmainis, Edmund: *See—*
Chinai, Suresh Natvarlal; and Brigmainis, Edmund, 3,812,004.

Brinker, John H., to American Standard Inc. Steel sidelight frame. 3,811,238, Cl. 52-204.000.

Britax (London) Limited: *See—*
Grime, Geoffrey, 3,811,701.

British Hovercraft Corporation, Limited: *See—*
Weeks, Albert Arthur, 3,811,583.

British Steel Corporation: *See—*
Middleton, Malcolm Cecil; and Lloyd, Henry Bassell, 3,811,490.

Broadt, David R., to GTE Sylvania Incorporated. Selective actuating mechanism for percussive photoflash lamp array. 3,812,339, Cl. 240-1.300.

Brobeck, William R.: *See—*
Hill, Charles E.; and Brobeck, William R., 3,812,458.

Brockman, George T.: *See—*
Mikulina, Thomas W.; Lievens, Ronald J.; and Brockman, George T., 3,811,790.

Brodes, Donald L.; and Hitchcock, Myron H., to Scope Incorporated. Signal pattern encoder and classifier. 3,812,291, Cl. 179-1.0sa.

Brook, Robert E., to TRW Inc. Optical signal recording system. 3,812,496, Cl. 346-108.000.

Brooks & Perkins, Incorporated: *See—*
Mollon, Leslie, 3,811,788.

Brookside Corporation: *See—*
Wooden, John A., 3,811,978.

Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans George, 3,811,386.

Brown, Gregory A.: *See—*
Ream, Donald E., Jr.; and Brown, Gregory A., 3,811,648.

Brown, Henry E., to Wilkinson Sword Limited. Apparatus for clinical measurement of blood pressure in a cardio-vascular system. 3,811,439, Cl. 128-205.00m.

Brown, James Roger: *See—*
Barraclough, Christopher George; and Brown, James Roger, 3,812,491.

Brown, Martin S.; and Avramidis, Stellios A., to FMC Corporation. Automatic tensioning device. 3,811,332, Cl. 74-242.11s.

Brown, Melancthon S.; and Kohn, Gustave K., to Chevron Research Company. Substituted aryl carbamates. 3,812,174, Cl. 260-479.00c.

Brown, Melancthon S., to Chevron Research Company. Fungicidal N-polyhalovinylthio ureas. 3,812,265, Cl. 424-322.000.

Brown, Melancthon Starr; deceased, to Chevron Research Company. 1-Hydrocarbyldithio-3-aryl ureas. 3,812,209, Cl. 260-453.00r.

Brown, Newton D., to Goodyear Tire & Rubber Company, The. Vehicle drive. 3,811,384, Cl. 104-147.000.

Brown, Robert L. Surveying apparatus with cutter. 3,811,348, Cl. 83-13.000.

Browning, Luther C., to Addressograph-Multigraph Corporation. Method and materials for control of contact electrostatic development. 3,811,880, Cl. 96-1.400.

Brudy, Peter E., to Dominion Auto Accessories Limited. Retractor assembly. 3,811,715, Cl. 287-14.000.

Brukovsky, Igor Pavlovich. Automatic control of the duty cycle of an electron beam heating device. 3,812,319, Cl. 219-121.0eb.

Bruno, Marshall J.: *See—*
Russell, Allen S.; Jarrett, Noel; Bruno, Marshall J.; and Remper, John A., 3,811,916.

Bruns, Eilert F., to U.S. Industries, Inc. Automatic centering reel for coil stock. 3,811,638, Cl. 242-78.600.

Buan, Danilo P.: *See—*
Abildgaard, William H.; Groswith, Charles T. III; Deman, Heiko T.; and Buan, Danilo P., 3,811,146.

Buchel, Karl Heinz: *See—*
Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,812,142.

Buchter, Jean-Edouard; and Jaeggi, Hans-Peter, to Matisa Materiel Industriel S.A. Process for packing and leveling railway tracks and device for performing the same. 3,811,382, Cl. 104-7.00r.

Buck, Leo V.: *See—*
Osterkorn, Charles Louis; Buck, Leo V.; Kloos, William W.; and Marino, Salvatore M., 3,812,322.

Buckeye Forge Division-Gulf & Western Industrial Products Company: *See—*
Eichinger, John W., 3,811,174.

Buddy L Corporation: *See—*
Salmon, Robert W.; and Herstein, Barry S., 3,811,218.

Bugaut, Andree; and Estradier, Francoise. Dyeing hair with diamine and aminophenol oxidation dyes and diamine or aminophenol couplers. 3,811,831, Cl. 8-11.000.

Buglewicz, Neal J. Sandwich connector plug. 3,812,451, Cl. 339-155.00r.

Bundy, Gordon L., to Upjohn Company, The. 15-Methyl and 15-ethyl dihydro-PGE_1. 3,812,172, Cl. 260-468.00d.

Bundy, Gordon L., to Upjohn Company, The. 15-Methyl and ethyl PGE_2. 3,812,179, Cl. 260-514.00d.

Buntin, Robert R., to Esso Research and Engineering Company. Battery separators made from polymeric fibers. 3,811,957, Cl. 136-146.000.

Burdett, Marion; and Walbridge, Derek John, to Imperial Chemical Industries, Limited. Process for the production of a disperison of a polymer in an organic liquid. 3,812,075, Cl. 260-33.6ua.

Burgin, Kermit H. Twin keel jet boat. 3,811,398, Cl. 115-16.000.

Burk, Robert L. Conditioned food transport container. 3,811,558, Cl. 206-4.000.

Burndy Corporation: *See—*
Anderson, James D.; and Cheh, Ernest L., 3,811,168.

Burnett, David B.; Alston, Robert B.; and Lim, Frank H., to Texaco Inc. Secondary recovery using carbon dioxide and an inert gas. 3,811,501, Cl. 166-252.000.

Burnett, David B., to Texaco Inc. Secondary recovery using carbon dioxide. 3,811,502, Cl. 166-252.000.

Burnett, David B.; and Lim, Frank H., to Texaco Inc. Secondary recovery using mixtures of carbon dioxide and light hydrocarbons. 3,811,503, Cl. 166-252.000.

Burns, Eugene A.: *See—*
Jones, Robert J.; and Burns, Eugene A., 3,812,083.

Burpo, Delbert L. Body support device. 3,811,140, Cl. 5-327.00r.

Burr, Harvey, to Anaconda Company, The, mesne. Method and apparatus for applying armor tape. 3,811,257, Cl. 57-9.000.

Burrell, Harry; and Miller, Robert C., Jr., to Inmot Corporation. Printing method for forming three dimensional simulated wood grain and product formed thereby. 3,811,915, Cl. 117-45.000.

Burroughs Corporation: *See—*
Hauck, Erwin A.; Birchmeier, Hans P.; and Kim, Dongsung R., 3,812,469.
Wollum, James E.; Birchmeier, Hans P.; and Sharp, Richard S., 3,812,468.

Burton, Christopher Philip, to International Computers Limited. Monitoring and display apparatus. 3,812,487, Cl. 340-324,0ad.

Bus-Rx, Inc.: *See—*
Kalaf, Abe M.; and Chiaro, Dominic A., 3,811,518.

Buschmann, Lothar; Prave, Paul; and Sukatsch, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Method of degrading natural plant material with an enzyme preparation. 3,812,012, Cl. 195-33.000.

Buse, Frederick W.; and Sensinger, Warner E., Jr., to Ingersoll-Rand Company. Multi-plunger reciprocating pump. 3,811,801, Cl. 417-454.000.

Buser, Rudolf G.: *See—*
Kaunzinger, Helmuth M.; and Buser, Rudolf G., 3,812,419.

Butcher, William J.: *See—*
Carstens, Ronald A.; and Butcher, William J., 3,812,055.

Butler, Lee D.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,811,584.

Butsch, Richard L.; and Brezosky, Bernard J., to General Electric Company. Torsionally reinforced, skeletal support frame for plastic tubs. 3,811,746, Cl. 312-228.000.

Butte, Walter A., Jr.: *See—*
Hollstein, Elmer J.; and Butte, Walter A., Jr., 3,812,148.

Butzow, Neil William, to Rexnord Inc. Car switching system. 3,811,383, Cl. 104-130.000.

Bystron, Bruno; Grimm, Eberhard; and Oexler, Rudolf. Spinning machine. 3,811,256, Cl. 57-1.00r.

Cabot Corporation, mesne: *See—*
Gardner, Ross, Jr., 3,811,437.

Calcagno, Benedetto: *See—*
Piccolo, Luigi; Calcagno, Benedetto; and Ghirga, Marcello, 3,811,908.
Piccolo, Luigi; Ghirga, Marcello; and Calcagno, Benedetto, 3,812,241.

Calderon, Henry A., to United Aircraft Corporation. Crossover tube construction. 3,811,274, Cl. 60-39.320.

Callahan, James L.: *See—*
Adams, Harry A.; Kunchal, Kumar; and Callahan, James L., 3,812,236.

Campbell, Donald E.: *See—*
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.

Campbell, William L. Sub soil irrigator and tree lift. 3,811,388, Cl. 111-7.100.

Canon Kabushiki Kaisha: *See—*
Aizawa, Hiroshi; and Ogiso, Matsutoshi, 3,812,510.
Hirano, Reiji; Ito, Matsutoshi; and Ishiwta, Juichi, 3,812,489.
Inoue, Mutsuhiro; and Tanaka, Kano, 3,812,327.
Kanayama, Mitsutoshi; and Konishi, Motofumi, 3,811,772.
Matsubs, Mutsuhide; Ogiso, Mitsutoshi; and Yazaki, Mutsunobu, 3,812,508.
Saito, Takashi; and Kubo, Shuniti, 3,811,914.

Capdevielle, Pierre; and Kermarrec, Francois, to Institut Francais du Petrole des Carburants et Lubrifiants and Societe Anonyme pour tour Appareillages Mecaniques. Tank structure for the storage and distribution of several fluids, particularly hydrocarbons 3,811,460, Cl. 137-255.000.

Cardenas, Ricardo L.: *See—*
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,504.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,505.

Carella, Richard F. Archery bowsight. 3,811,195, Cl. 33-265.000.

Carlin, Joseph T., to Texaco Inc. Tar sand recovery method. 3,811,506, Cl. 166-274.000.

Carlson, David Emil; Hang, Warren Kenneth; and Stockdale, George Fairbank, to RCA Corporation. Method of treating a glass body to provide an ion-depleted region therein. 3,811,855, Cl. 65-30.000.

Caropreso, Frank Edward: *See—*
Shirley, Joseph Floyd; Caropreso, Frank Edward; and Fraser, George Lamar, 3,811,569.

Carpenter Technology Corporation: *See—*
Goda, Kermit J., Jr.; and Aulenbach, Grant M., 3,811,875.

Carr, Walter J., Jr.: *See—*
Miller, Robert C.; and Carr, Walter J., Jr., 3,812,484.

Carre, Jean-Jacques, to Societe Anonyme D.B.A. Braking pressure regulating device for a vehicle. 3,811,738, Cl. 303-22.00r.

Carroll, David I.: *See—*
Wernlund, Roger F.; Carroll, David I.; Kilpatrick, Wallace D.; and Cohen, Martin J., 3,812,355.

Carron Hydraulics Limited: *See—*
Stuart, Douglas, 3,811,525.

Carson, James W. Remotely controlled day-night outside truck mirror. 3,811,755, Cl. 350-289.000.

Carstens, Ronald A.; and Butcher, William J., to Key Chemicals, Inc. Mixed alumina dispersions. 3,812,055, Cl. 252-313.000.

Carter Industries, Inc.: *See—*
Crosser, David Keith; Mell, Leonard E.; and Reuvers, John F., 3,812,532.

Carter, John A. Picnic accessories. 3,811,559, Cl. 206-4.000.

Carter, Lyle. Apparatus for collecting surface particles on body of water. 3,811,325, Cl. 73-425.40r.

Cartwright, John Edward: *See—*
Rumbold, Bernhard Carl; and Cartwright, John Edward, 3,811,898.

Caruel, Jacques Emile Jules; Quillevere, Herve Alain; Castellant, Jean-Pierre Jules Emile; and Lacroix, Armand Jean-Baptiste, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Cooling of combustion chamber walls. 3,811,276, Cl. 60-39.60.

Case, J. I., Company: *See—*
Seaberg, David H., 3,811,587.
Shumaker, John F.; and Morehouse, James O., 3,811,582.

Casey, Robert, to Caterpiller Tractor Company. Axle trunnion support arrangement. 3,811,699, Cl. 280-111.000.

Cashen, Norton A.; Kullman, Russell M. H.; and Reinhardt, Robert M., to United States of America, Agriculture. Mild cure finishing process incorporating improved catalyst systems to produce wrinkle resistant, durable pressed and creased cellulosic textile roducts. 3,811,210, Cl. 38-144.000.

Cason, Charles M., III: *See—*
Honeycutt, Thomas E.; Otto, William F.; and Cason, Charles M., III, 3,811,774.

Castarede, Armand, to Regie Nationale des Usines Renault and Automobiles Peugeot. Drive belt tensioning device. 3,811,333, Cl. 74-242.15r.

Castellant, Jean-Pierre Jules Emile: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; Castellant, Jean-Pierre Jules Emile; and Lacroix, Armand Jean-Baptiste, 3,811,276.

Castillo, Adolfo: *See—*
Jureit, John Calvin; and Castillo, Adolfo, 3,811,578.
Castoe, John H., to Branick Manufacturing Company. Camber and caster adjustment tool. 3,811,654, Cl. 254-131.000.
Cater, John P. Coded time indicating transmission system. 3,811,265, Cl. 58-24.00r.
Caterpillar Tractor Co.: *See—*
Hamrick, Oscar; and Kessinger, Orville E., Jr., 3,811,542.
Schexnayder, Lawrence F., 3,811,282.
Caterpillar Tractor Company: *See—*
Cryder, John R., 3,811,363.
Caterpiller Tractor Company: *See—*
Casey, Robert, 3,811,699.
Yancey, John W., 3,811,577.
Catitti, Aldo: *See—*
Sacerdoti, Giancarlo; Catitti, Aldo; and Di Marino, Ciampino, 3,811,740.
Caudill, Fred R.: *See—*
De Regenaucourt, Robert A.; and Caudill, Fred R., 3,811,734.
De Regnaucourt, Robert A.; and Caudill, Fred R., 3,811,733.
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., to Olin Corporation. Oxidation resistant iron base alloy. 3,811,874, Cl. 75-124.000.
Cauvin, Sidney L., Jr.: *See—*
Goodnow, Warren H.; Cauvin, Sidney L., Jr.; and Simard, Joseph G. C., 3,812,024.
C.A.V. Limited: *See—*
Jackson, Gordon Frederick William, 3,811,799.
Cecere, Andrew P., to Samcoe Holding Corporation. Method and apparatus for spreading tubular knitted fabric. 3,811,159, Cl. 26-55.00r.
Celanese Corporation: *See—*
Higdon, Buster W.; Hobbs, Charles C.; and Onore, Michael J., 3,812,210.
Celling, Wolter Geppienus, to U.S. Philips Corporation. Method of manufacturing a semiconductor device and semiconductor device manufactured by the method. 3,811,183, Cl. 29-588.000.
Centre National de Recherches Metallurgiques: *See—*
Ponghis, Nicholas Gerassimo; and Poos, Arthur Gerard, 3,811,869.
Ceskoslovenska akademic ved: *See—*
Stoy, Artur, 3,812,071.
Ceskoslovenska akademic ved: *See—*
Tykva, Richard, 3,812,360.
Chakrabarty, Anada M.: *See—*
Bellamy, Winthrop D.; and Chakrabarty, Anada M., 3,812,013.
Chalmers, R. Robert. Hinge lock. 3,811,150, Cl. 16-137.000.
Chance, Britton. Time-sharing fluorometer and reflectometer. 3,811,777, Cl. 356-73.000.
Chang, Yun Feng: *See—*
Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, 3,811,910.
Chao, Hung-Chi; Judd, Robert R.; Rueckl, Roger L.; and Russell, Charles K., to United States Steel Corporation. Production of powder metallurgical parts by preform and forge process utilizing sucrose as a binder. 3,811,878, Cl. 75-211.000.
Chapman, James Ronald: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,811,669.
Chappeil, George M. Process for treating domestic and industrial liquid wastes. 3,812,032, Cl. 210-52.000.
Charlson, Paul Marlin; Den Tex, Karel; and Fingerson, Conrad Ferdinand, to International Business Machines Corporation. Impact printer. 3,811,377, Cl. 101-93.00c.
Cheh, Ernest L.: *See—*
Anderson, James D.; and Cheh, Ernest L., 3,811,168.
Chen, Nai Yuen; and Lucki, Stanley J., to Mobil Oil Corporation. Disproportionation of paraffin hydrocarbons. 3,812,199, Cl. 260-676.00r.
Chen, Wayne: *See—*
United States of America, National Aeronautics and Space administration, 3,811,429.
Cherenson, Edward L., to Artisan Industries, Inc. Process for the expansion of expandable resin beads. 3,811,822, Cl. 432-13.000.
Chesapeake and Ohio Railway Company, The: *See—*
Schmidt, Joseph J., 3,812,325.
Chesbrough-Pond's Inc.: *See—*
Turnbull, Charles H., 3,811,671.
Chevron Research Company: *See—*
Brown, Melancthon S.; and Kohn, Gustave K., 3,812,174.
Brown, Melancthon S., 3,812,265.
Brown, Melancthon Starr, 3,812,209.
Hutchison, Stanley O., 3,811,499.
Lapporte, Seymour J.; and Toland, William G., 3,812,176.
Chia, Enrique C.: *See—*
Schoerner, Roger J.; and Chia, Enrique C., 3,811,846.
Chiang, Yunn H.: *See—*
Bader, Henry; and Chiang, Yunn H., 3,812,115.
Chiaro, Dominic A.: *See—*
Kalaf, Abe M.; and Chiaro, Dominic A., 3,811,518.
Chicago Magnet Wire Corp.: *See—*
Jordan, Anthony, 3,811,639.
Chin, David: *See—*
Previte, Robert W.; and Chin, David, 3,812,076.
Chin, Dick Yen, to Itek Corporation. Scanning beam position indicator. 3,812,371, Cl. 250-217.00r.
Chinai, Suresh Natvarlal; and Brigmainis, Edmund, to American Cyanamid Company. Naturally crimped textile fibers. 3,812,004, Cl. 161-173.000.
Chodnekar, Madhukar S.; Thommen, Hans; and Schwieter, Ulrich, to Hoffmann-La Roche Inc. Substituted propiolophenones used as plant fungicides. 3,812,262, Cl. 424-282.000.
Chore-Time Equipment, Inc.: *See—*
Murto, Robert A.; and Hostetler, Eldon, 3,811,412.
Christensen, Wynn L., to Readx Inc. Height gauge. 3,811,192, Cl. 33-170.000.
Christiani and Nielsen Limited: *See—*
Persicke, Gunter, 3,811,653.
Christiansen, Carl L.; Kanter, Lawrence E.; and Monroe, George R., to International Business Machines Corporation. Data synchronizer. 3,812,475, Cl. 340-172.500.
Christy, Marcia E.: *See—*
Engelhardt, Edward L.; and Christy, Marcia E., 3,812,177.
Chromalloy American Corporation: *See—*
Weinstein, Martin; Speirs, Kenneth K.; and Baer, Robert B., 3,811,959.
Weinstein, Martin; Singhal, Subhash C.; and Ellis, John L., 3,811,961.
Chrysler Corporation: *See—*
Andersen, Poul H.; Povilaitus, Frank R.; and Himes, Robert S., 3,812,312.
Turkovich, Frank D., 3,811,703.
Chupp, John Paul, to Monsanto Company. Tetrahydrothioquinazolinones. 3,812,121, Cl. 260-251.00a.
Ciba-Geigy AG: *See—*
Hubele, Adolf, 3,811,932.
Martin, Henry; and Pissiotas, Georg, 3,812,260.
Randell, Donald Richard; Miles, Peter; and Virgin, Allan Geoffrey, 3,812,193.
Zographos, Georg; and Frey, Christoph, 3,811,883.
Ciba-Geigy Corporation: *See—*
Dietrich, Henri; and Lehmann, Claude, 3,812,144.
Hoegerle, Karl; Muller, Jean-Claude; Vogel, Christian; and Rumpf, Jurg, 3,812,168.
Walker, Gordon Northrop, 3,812,119.
Werner, Lincoln Harvey, 3,812,104.
Zust, Armin; and Schindler, Walter, 3,812,126.
Cincinnati Milacron Inc.: *See—*
Eby, Clyde Richard, 3,811,233.
Cities Service Oil Company: *See—*
Priebe, Frank D., 3,811,509.
Citizen Watch Co., Ltd.: *See—*
Kunitomi, Yoshio, 3,811,315.
Citizen Watch Company Limited: *See—*
Samura, Hiroyoshi, 3,811,266.
Clairol Incorporated: *See—*
De Marco, Richard, 3,811,830.
Clambake International, Incorporated: *See—*
Mann, Douglas G., 3,811,374.
Clark & Vicario Corporation: *See—*
Kaiser, Robert G., 3,812,007.
Clark, Donald B.: *See—*
Barrett, Hillard E.; Clark, Donald B.; and Seid, Bernard, 3,811,713.
Clark, Gary T.: *See—*
Fisher, John G.; and Clark, Gary T., 3,812,093.
Clark, Justin S., to Primary Childrens Hospital. Air emboli detector. 3,812,482, Cl. 340-237.00r.
Clark, Lowell Eugene, to Motorola, Inc. Stable thyristor device. 3,812,405, Cl. 317-235.0ab.
Clark, Roy; and Westfield, Donald, to Polymer Corporation Limited. Process for producing foam rubber-backed textiles. 3,811,922, Cl. 117-76.00t.
Clarkson, Robert J., to Uniroyal, Inc. Production of asbestos yarns. 3,811,262, Cl. 57-140.0by.
Clay, Harris A., to Phillips Petroleum Company. Process for the transportation of acid gases in natural gas liquids streams. 3,812,030, Cl. 208-340.000.
Clecak, Nicholas J.; Cox, Robert J.; and Mareau, Wayne M., to International Business Machines Corporation. Azides. 3,812,162, Cl. 260-349.000.
Close, Frederick J., to Stolle Corporation, The. Manufacture of cans and the like. 3,811,393, Cl. 113-120.00r.
Cloud, Robert: *See—*
Barton, Henry W.; and Cloud, Robert, 3,811,300.
Clovis, James S.; and Sullivan, Francis R., to Rohm & Haas Company. Ring Phosphonates. 3,812,219, Cl. 260-936.000.
Coates, Harold J.: *See—*
Craig, H. Lee, Jr.; and Coates, Harold J., 3,812,021.
Coats, John H.: *See—*
Argoudelis, Alexander D.; and Coats, John H., 3,812,014.
Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., 3,812,096.
Coberley, Daniel A., to Hurletron Incorporated. Rotary position detector machine control system. 3,812,351, Cl. 250-231.0se.
Cocker, Bernice, 20% interest to Lee, Raymond, Organization, Inc., The. Combination end table, magazine rack and step ladder. 3,811,533, Cl. 182-28.000.

Coen Company: *See—*
Vosper, Ralph Richard, 3,811,827.
Coggon, Philip: *See—*
Sanderson, Gary Warner; and Coggon, Philip, 3,812,266.
Cohen, Martin J.: *See—*
Wernlund, Roger F.; Carroll, David I.; Kilpatrick, Wallace D.; and Cohen, Martin J., 3,812,355.
Cohen, Menachem. Louver structure and luminous ceiling utilizing same. 3,812,341, Cl. 240-9.00r.
Coilcraft, Inc.: *See—*
Schroeder, Charles E., 3,812,443.
Cole, Ernest A., Jr.: *See—*
Jarvis, Howell R.; and Cole, Ernest A., Jr., 3,812,027.
Cole, Howard W., Jr. Equipment for making foam for dust suppression and other purposes. 3,811,660, Cl. 261-18.00b.
Cole, Richard D. Paper cutter guard. 3,811,355, Cl. 83-520.000.
Coleman, Richard R., Jr.; and Weber, Helmut E., to General Power Corporation. Integral turbo-compressor wave engine. 3,811,796, Cl. 417-64.000.
Colgate-Palmolive Company: *See—*
Gray, Frederick William, 3,812,045.
Inamorato, Jack Thomas, 3,812,041.
Lancz, Albert Jay, 3,812,046.
Verdier, Denise, 3,812,042.
Collina, Giancarlo L.; and Tessera, Giancarlo, to Honeywell Information Systems Italia. Multiple adaptive decoding system for binary microinstructions. 3,812,464, Cl. 340-172.500.
Collins Radio Company: *See—*
Mineck, David W.; and Manke, Girard M., 3,812,333.
Collins, Robert J., to Upjohn Company, The. Animal feed and process. 3,812,259, Cl. 424-269.000.
Collins, Thomas Robert Stephen: *See—*
Garner, Paul Johnson; and Collins, Thomas Robert Stephen, 3,811,175.
Columbia Broadcasting Systems, Inc.: *See—*
Bauer, Benjamin B., 3,812,295.
Coman, William E., to Bendix Corporation, The. Aircraft starter control system. 3,812,378, Cl. 290-38.000.
Combustion Engineering, Inc.: *See—*
Taccone, Russell William, 3,811,813.
Comitati Nazionale Per l'Energia Nucleare (CNEN): *See—*
Sacerdoti, Giancarlo; Catitti, Aldo; and Di Marino, Ciampino, 3,811,740.
Comitato Nazionale per l'Energia Nucleare: *See—*
De Carolis, Massimiliano, 3,812,422.
Commercial Solvents Corporation: *See—*
Wehrmeister, Herbert L., 3,812,111.
Wehrmeister, Herbert L.; and Robertson, Donald E., 3,812,155.
Commissariat a l'Energie Atomique: *See—*
Bertrand, Gerard; Perroud, Paul; and Sylvestre-Baron, Martial, 3,812,026.
Communications Satellite Corporation: *See—*
Lindmayer, Joseph, 3,811,954.
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., 3,812,430.
Compagnie General des Etablissements Michelin raison Sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,811,737.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Dillenschneider, Jean-Paul, 3,812,087.
Computer Identics Corporation: *See—*
Tuhro, Richard H., 3,812,374.
Conforti, Arthur R., to Melco Industries Inc. Sewing guide apparatus. 3,811,391, Cl. 112-147.000.
Conkey, Robert E.: *See—*
Angelis, William J.; Berger, Robert E.; and Conkey, Robert E., 3,811,366.
Connac, Gabriel Henri. Method and apparatus for cutting saw-teeth from the webs of structural shapes. 3,811,351, Cl. 83-49.000.
Connaughton, Joseph W.: *See—*
Wharton, Walter W.; and Connaughton, Joseph W., 3,811,280.
Connollys (Blackley) Ltd.: *See—*
Tomlinson, Roy, 3,811,406.
Connor, Daniel S.; and Krummel, Harry Karl, to Procter & Gamble Company, The. Detergent composition containing a polyfunction ally-substituted aromatic acid sequestering agent. 3,812,044, Cl. 252-89.000.
Consiglio Nazionale Delle Ricerche: *See—*
De Rossi, Mario, 3,811,945.
Consolidated Natural Gas Service Co., Inc.: *See—*
Massey, Lester G.; Tarman, Paul B.; and Huebler, Jack, 3,812,048.
Consolidated Paper (Bahamas) Limited: *See—*
Wilkinson, Michael C.; Blais, Leo; Martin, Wilhelm N.; and Tesainer, Silvano, 3,811,987.
Conti, Gianni: *See—*
Bianchi, Massimo; and Conti, Gianni, 3,811,296.
Continental Can Company: *See—*
Frankenberg, Henry E.; and Peyser, Harry A., 3,811,597.
Continental Can Company, Inc.: *See—*
Lurie, Randolph D., 3,812,002.
Continental Homes, Incorporated: *See—*
Powell, John Dillard, 3,811,235.
Continental Oil Company: *See—*
Gilchrist, James L., 3,812,353.
Gordon, Ronnie D., 3,812,212.
Johnson, Morris A.; and Yang, Kang, 3,812,211.
Krenowicz, Robert A.; and Scott, William P., 3,812,035.
Romine, Hugh E., 3,812,036.
Controls Company of America: *See—*
Kozel, James A.; and Ostrowski, Edwin A., 3,812,398.
Cook, David Langman, to Square D Company. Mechanically held latch attachment for an electromagnetic relay. 3,812,440, Cl. 335-167.000.
Cook, Gerald H., to Polaroid Corporation. Photographic cassette having an improved film operated processing system. 3,812,515, Cl. 354-319.000.
Cook, Melvin Alonzo; Funk, Albert G.; and Hansen, Gary L., to Ireco Chemicals. Method of blasting under high pressure conditions at elevated and normal temperatures. 3,811,971, Cl. 149-92.000.
Cook Paint and Varnish Company: *See—*
Wright, Howard J., 3,812,202.
Cook, William A.: *See—*
Lerwick, Everett R.; and Cook, William A., 3,811,446.
Cooley, Stone D.: *See—*
Besozzi, Alfio J.; Cooley, Stone D.; and Potts, Fred E., III, 3,812,158.
Copeland Refrigeration Corporation: *See—*
King, Robert W., 3,811,806.
Cordonnier, Gerard Anatole, to Le Materiel Compact. Apparatus for reading microdocuments. 3,811,763, Cl. 353-77.000.
Corey, Harold; Bakal, Abraham; Konigsbacher, Kurt; and Schoenholz, Daniel, to Snell, Foster D., Inc. Compressed compounded food product and method of making same. 3,812,268, Cl. 426-146.000.
Corken Pump Company: *See—*
Kennedy, William A., Jr., 3,811,792.
Corn, Prentice R.: *See—*
Wolf, Walter A.; Corn, Prentice R.; and Gebhardt, Wallace A., 3,812,313.
Cornelius, Gail L., to Wade, R. M., & Co. 90° Safety shutoff system for self-propelled sprinkling apparatus. 3,811,617, Cl. 239-189.000.
Corning Glass Works: *See—*
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.
Coscia, Anthony Thomas: *See—*
Williams, Laurence Lyman; and Coscia, Anthony Thomas, 3,812,084.
Cotton Incorporated: *See—*
Gamarra, Jose P.; Swidler, Ronald; and Wilson, Katherine W., 3,811,131.
Cotton, Robert B. Thrust augmenting device for jet aircraft. 3,811,791, Cl. 416-129.000.
Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; and Hogg, Walter R., 3,812,335.
Coulter, J. Roland, to Tull Aviation Corporation. Method and apparatus for monitoring frequency. 3,812,427, Cl. 324-79.00d.
Coulter, Wallace H.; and Hogg, Walter R., to Coulter Electronics, Inc. Apparatus for obtaining statistical indices and analyzing the same and method. 3,812,335, Cl. 235-151.300.
Coulthard, James Albert, to Marie Luise Batzner Coulthard and David Malcolm Pearson. Projection screens. 3,811,750, Cl. 350-117.000.
Cowell, Thomas E., to Rockwell International Corporation. Surface scaler apparatus. 3,811,320, Cl. 73-71.50u.
Cox, James F.: *See—*
Sinclair, Richard A., 3,812,446.
Cox, Robert J.: *See—*
Clecak, Nicholas J.; Cox, Robert J.; and Mareau, Wayne M., 3,812,162.
Cozza, Giorgio: *See—*
Barilli, Filippo; Cozza, Giorgio; and Bareggi, Vittorio, 3,812,242.
Cragon, Harvey G., to Texas Instruments Incorporated. Memory device. 3,812,476, Cl. 340-173.0rc.
Craig, H. Lee, Jr.: *See—*
Schardein, Daniel J., Jr.; Rogers, Charles M.; and Craig, H. Lee, Jr., 3,812,023.
Craig, H. Lee, Jr.; and Coates, Harold J., to Reynolds Metals Company. Inorganic coatings for aluminous metals. 3,812,021, Cl. 204-58.000.
Crainich, Victor A., Jr.: *See—*
de la Torriente, Leandro J.; and Crainich, Victor A., Jr., 3,812,056.
Crane, Jack W.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,811,584.
Crawford, Charles M., III: *See—*
Throckmorton, Thomas Marvin; and Crawford, Charles M., III, 3,811,134.
Crawford, Gerald J. B., to Schlumberger Technology Corporation. Acoustic logging apparatus for travel time and cement bond logging. 3,811,529, Cl. 181-.5ed.
Crawford, James E.; and Russell, Richard H., to Owens-Illinois, Inc. Method of coating glass surface and products produced thereby. 3,811,921, Cl. 117-72.000.
Creators Limited: *See—*
Hearn, Robert Renner, 3,811,989.
Creighton, David M.: *See—*
Austin, Robert R.; and Creighton, David M., 3,811,253.

Creutz, Hans-Gerhard; Romanowski, Edward A.; and Symons, Philip C., to Occidental Energy Development Company. Battery electrolyte composition containing the reaction product of an amine and an aldehyde. 3,811,946, Cl. 136-30.000.

Crone, John M., Jr.: *See—*
Suggitt, Robert M.; and Crone, John M., Jr., 3,812,197.

Cronin, Timothy H.; and Hess, Hans-Jurgen E., to Pfizer Inc. 4-(Quinolin-4-yl)piperazine-1-carboxylic acid esters. 3,812,127, Cl. 260-268.0bq.

Cronson, Harry M.; and Mitchell, Peter G., to Sperry Rand Corporation. Network time domain measurement system. 3,812,423, Cl. 324-58.50a.

Crosley, Thomas Whitley, to GTE Automatic Electric Laboratories, Incorporated. Sequential control circuit having improved fault detection and diagnostic capabilities. 3,812,337, Cl. 235-153.0ac.

Crosser, David Keith; Mell, Leonard E.; and Reuvers, John F., to Carter Industries, Inc. Random access memory with tape return to a midtape reference position after reading. 3,812,532, Cl. 360-72.000.

Crossland, Edward J.; Blossom, James H.; and Krasin, Lester Q., to Seismograph Service Corporation. Remote monitoring and remote control systems. 3,812,462, Cl. 340-163.000.

Crossman, Richard L., to Goodyear Tire & Rubber Company, The. Over pressurization release device and valve. 3,811,457, Cl. 137-73.000.

Crouzet: *See—*
Derre, Andre; and Jourdin, Jacques, 3,812,338.

Crowell, Merton H., to North American Philips Corporation. Circuit arrangement for producing pedestal current in a pyroelectric thermo imaging tube. 3,812,396, Cl. 315-10.000.

Crown Controls Corporation: *See—*
Pulskamp, Gerald Steven, 3,811,336.

Cryder, John R., to Caterpillar Tractor Company. Priority system for series-type hydraulic circuits. 3,811,363, Cl. 91-412.000.

Culver, Gordon G.; and Riemath, William F., to United States of America, Atomic Energy Commission. Method and apparatus for the in-vessel radiation treatment of blood. 3,811,426, Cl. 128-1.200.

Cummings, Alan F.; and Freeman, Gene G., to Rockwell International Corporation, mesne. Tubular extendable structure. 3,811,633, Cl. 242-54.00a.

Cunningham, Ernest R., to Grip-Pack Inc., mesne. Method of assembling multi-packaging devices to articles. 3,811,243, Cl. 53-30.000.

Cunningham, Russell E.; and Light, Gordon S., to Sigma Systems, Inc. Optical reader. 3,812,347, Cl. 250-568.000.

Curran, William Vincent, to American Cyanamid Company. Novel method for lowering blood pressure in mammals. 3,812,256, Cl. 424-250.000.

Curtin, Daniel J., to Atlantic Richfield Company. Method for centrifuging of tar sands froth. 3,811,614, Cl. 233-18.000.

Curtis, Russell B. Tricycle horse. 3,811,695, Cl. 280-1.192.

Cutters Machine Company, Inc.: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,811,669.

Cybrix Corporation: *See—*
Harford, James W.; and Jeffries, Stuart W., 3,811,625.

Cylke, Edward J. Cassette carrier. 3,811,745, Cl. 312-13.000.

Cyrway, Edward N., Jr.; and Schmidt, Charles J., to Abar Corporation. Resistance heating element for vacuum furnaces. 3,812,276, Cl. 13-25.000.

Dahlman, George L.; and Kern, Leon O., to Houdaille Industries, Inc. Collet chuck. 3,811,694, Cl. 279-83.000.

Dai Nippon Printing Co., Ltd.: *See—*
Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo (said Nakayama, Takao, Oka, Yutaka and Nakai, Yasuo assors. to), 3,811,884.

d'Albignac, Jean Marie Louis Jules; and Gamaury, Jean-Francois, to Societe Civile Soltex. Continuous dyeing of synthetic textile fibres with a basic character. 3,811,836, Cl. 8-173.000.

D'Alelio, Gaetano F.; and Kuehn, Erich, to ICI America Inc. Dihalobutene diol containing compositions. 3,812,047, Cl. 252-182.000.

Dalibor, Horst: *See—*
Katsimbas, Themistoklis; Dalibor, Horst; and Quednau, Peter, 3,812,067.

Dambite, Guna Robertowna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

D'Ambra, Michael. Extended front end for a bike. 3,811,705, Cl. 280-279.000.

D'Amico, John J.: *See—*
Boustany, Kamel; and D'Amico, John J., 3,812,139.

Dane, Ernest Blaney, Jr. Deep sea mining system. 3,811,730, Cl. 299-8.000.

Daniels, Arthur L.: *See—*
Schmidt, Donald L.; Daniels, Arthur L.; and Petrella, Ronald V., 3,812,244.

Danko, Oliver L.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.

Danks, Ronald D.: *See—*
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., 3,811,381.

Darlak, Robert S.; and Wright, Charles J., to Eastman Kodak Company. Silver halide photographic element containing a vinylsulfonyl compound hardener and an acrylic urea as formaldehyde scavenger. 3,811,891, Cl. 96-74.000.

Dart Controls, Inc.: *See—*
Penn, Paul E.; and Waymire, John, 3,812,408.

Dart Industries, Inc.: *See—*
Killen, Richard J.; Brandom, Boyce; and Howard, Lyman S., 3,811,244.

D'Ascoli, Ralph G.: *See—*
Barone, Angelo P.; D'Ascoli, Ralph G.; and Bechle, Charles W., 3,811,311.

Dasibi Corporation: *See—*
Bowman, Lloyd D.; Karhade, Manohar G.; and Schneiderman, Daniel I., 3,812,330.

Daskivich, Michael, to Precision Metalsmiths, Inc. Silicone coated injection moldable, thermoplastic material. 3,811,903, Cl. 106-187.000.

Dates, Harold F.: *See—*
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.

David Malcolm Pearson: *See—*
Coulthard, James Albert, 3,811,750.

Davis, George B., Jr. Control for christmas tree lighting. 3,812,380, Cl. 307-11.000.

Davis, William Fosom; and Pace, Wilson David, to Motorola, Inc. Bonding pad substructure for integrated circuits. 3,812,521, Cl. 357-48.000.

Day, Richard P.: *See—*
Meier, Rudolf H.; Day, Richard P.; and Thompson, Christopher J. C., 3,812,359.

Dayton Steel Foundry Company, The: *See—*
De Regenaucourt, Robert A.; and Caudill, Fred R., 3,811,734.
De Regnaucourt, Robert A.; and Caudill, Fred R., 3,811,733.
De Regnaucourt, Robert A., 3,811,735.
De Regnaucourt, Robert A., 3,811,736.
Walther, William D.; and De Regnaucourt, Robert A., 3,811,732.

De Barbadillo, John Joseph, II, to International Nickel Company, The. High strength low cost steel for use at cryogenic temperatures. 3,811,873, Cl. 75-123.00k.

De Bont, Paulus Maria; and Van Liefland, Willem, to U.S. Philips Corporation. Spark erosion device having arc detecting means. 3,812,317, Cl. 219-69.00p.

De Bussy, Jacques Marie Yves Le Clerc. Method for producing objects from a molten ceramic product. 3,812,226, Cl. 264-6.000.

De Carolis, Massimiliano, to Comitato Nazionale per l'Energia Nucleare. Apparatus for measuring the levels of fluids and the dielectric constants of the same. 3,812,422, Cl. 324-58.50b.

de la Torriente, Leandro J.; and Crainich, Victor A., Jr., to National Cash Register Company, The. Continuous encapsulation. 3,812,056, Cl. 252-316.000.

De Marco, Richard, to Clairol Incorporated. Stable oil-in-water emulsion hair dye composition. 3,811,830, Cl. 8-10.100.

De Regenaucourt, Robert A.; and Caudill, Fred R., to Dayton Steel Foundry Company, The. Spacer for a dual rim and spoked wheel assembly. 3,811,734, Cl. 301-13.0sm.

De Regnaucourt, Robert A.: *See—*
Walther, William D.; and De Regnaucourt, Robert A., 3,811,732.

De Regnaucourt, Robert A.; and Caudill, Fred R., to Dayton Steel Foundry Company, The. Retained fastening elements for a rim and wheel assembly. 3,811,733, Cl. 301-12.00r.

De Regnaucourt, Robert A., to Dayton Steel Foundry Company, The. Positioned clamp lugs for a dual rim and wheel assembly. 3,811,735, Cl. 301-13.00r.

De Regnaucourt, Robert A., to Dayton Steel Foundry Company, The. Torque transmitting means for a dual rim, spacer and wheel assembly. 3,811,736, Cl. 301-13.00r.

De Rijke, David; and Boelens, Harmannus, to Naarden International N.V. Perfume compositions containing 6-propyl-3-cyclohexene carbaldehydes. 3,812,059, Cl. 252-522.000.

De Rossi, Mario, to Consiglio Nazionale Delle Ricerche. Electric battery. 3,811,945, Cl. 136-10.000.

De Valenzuela, Ricardo Barredo. Systems of anchorage to the traction jack of reinforcements to be post-tensioned. 3,811,652, Cl. 254-29.00a.

De Winter, Jan Gerrit. Bottom and bank facing. 3,811,287, Cl. 61-38.000.

Decis, Mario. Automatic pilot device. 3,811,395, Cl. 114-144.00r.

Deckert, Andreas, to Siemens Aktiengesellschaft. Electrical capacitors with vented closures. 3,812,280, Cl. 174-52.00s.

Defg, Emil W.; Silverberg, Carl G.; and Martel, Leslie B. Method for tire polishing optical glass lenses with plasma flames. 3,811,857, Cl. 65-65.00r.

Dehar, David C., to Ford Motor Company. Valve assembly. 3,811,650, Cl. 251-144.000.

Del Missier, Richard J., to Tri-Way Industries, Inc. Convertible berth. 3,811,138, Cl. 5-9.000.

Delany, Edward B.; and Mayo, Ralph E. Electron bombardment ion source for a mass spectrometer having a nonspecular inner surface. 3,812,367, Cl. 250-427.000.

Delorme, Raymond Louis: *See—*

Siegel, Pierre Louis; and Delorme, Raymond Louis, 3,811,609.
Deltrol Corporation: *See—*
Harris, John L., 3,812,306.
Deman, Heiko T.: *See—*
Abildgaard, William H.; Groswith, Charles T. III; Deman, Heiko T.; and Buan, Danilo P., 3,811,146.
Dempsey, James Joseph; and Smith, Drexel Kermit, to Du Pont de Nemours, E. I., and Company. Peg-roll softening of fibrillated sheet. 3,811,979, Cl. 156-181.000.
Den Tex, Karel: *See—*
Charlson, Paul Marlin; Den Tex, Karel; and Fingerson, Conrad Ferdinand, 3,811,377.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Kadowaki, Takashi; Itoyama, Kenji; and Matsuzawa, Shoya, 3,812,203.
Dennis, William E.; and Vogel, George E., to Dow Corning Corporation. Quaternary ammonium salt catalyst. 3,812,081, Cl. 260-46.50r.
Derbyshire, George C., to Jacobs Manufacturing Company, Limited, The. Drill chuck. 3,811,693, Cl. 279-18.000.
Derose, Michael A.: *See—*
Schortmann, Walter E.; and Derose, Michael A., 3,812,006.
Derre, Andre; and Jourdin, Jacques, to Crouzet. Analog function generator. 3,812,338, Cl. 235-197.000.
Des Rosiers, Jacques: *See—*
Aubert, Emilien; and Des Rosiers, Jacques, 3,812,250.
Desert Pharmaceutical Company, Inc.: *See—*
Moorehead, Harvey Robert; and Reading, George R., 3,811,440.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Mueller, Hans-Karl; and Lumbeck, Gerd, 3,812,269.
Devansco, Inc.: *See—*
Evans, Dewey M.; and Johnson, Willard L., 3,811,252.
Dewaele, Sylvain A. R.: *See—*
Dulog, Lothar G.; and Dewaele, Sylvain A. R., 3,812,033.
Di Marino, Ciampino: *See—*
Sacerdoti, Giancarlo; Catitti, Aldo; and Di Marino, Ciampino, 3,811,740.
Dibella, Robert N.: *See—*
Avampato, Dominic C.; Dibella, Robert N.; and Vasas, Roger E., 3,811,950.
Dick, A. B., Company: *See—*
Rempala, Chester S., 3,812,375.
Dickens, John. Overhead by-pass flood control means. 3,811,463, Cl. 137-362.000.
Dickinson, Ben W. O., III; Dickinson, Robert W.; and Miller, Cecil R., said Miller, Cecil R.; assors. to Smith, Kline & French Laboratories and said Dickinson, Ben W. O., III, and Dickinson, Robert W., assors. to Agrophysics, Inc. Artificial method for modfying the reproductive cycle in animals. 3,811,424, Cl. 128-1.00r.
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, to Agrophysics, Inc. Device for insertion into the reproductive tract and method of using same. 3,811,423, Cl. 128-1.00r.
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, to Agrophysics, Inc. Method and apparatus for artificial insemination. 3,811,443, Cl. 128-235.000.
Dickinson, Robert W.: *See—*
Dickinson, Ben W. O., III; Dickinson, Robert W.; and Miller, Cecil R., 3,811,424.
Dickinson, Robert Wayne: *See—*
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, 3,811,423.,
Dickinson, Ben Wade Oakes, III; and Dickinson, Robert Wayne, 3,811,443.
Diebler, Herman G.; Gyori, Steven Andrew; and McCandless, William J. C., to Technicon Instruments Corporation. Temperature-controlled fluid manifold for a fluid system of an automated sample analyzer. 3,811,842, Cl. 23-259.000.
Diefendorf, Russell J., to Great Lakes Carbon Corporation. Boron deposition on carbon monofilament. 3,811,917, Cl. 117-47.00r.
Dieffenbach, Percy, to Masterpiece, Inc. Collapsible artificial shrub. 3,811,991, Cl. 161-24.000.
Diel, Burkhart; Gregor, Kurt; and Huber, Walther, to Siemens Aktiengesellschaft. Method for mass production of housings for semiconductor devices provided with required connecting terminals. 3,811,187, Cl. 29-630.00r.
Dierker, Joachim: *See—*
Prag, Rudolf; and Dierker, Joachim, 3,812,361.
Dieter, Julian A.: *See—*
Weichhand, Robert J.; Schuler, Ralph J.; and Dieter, Julian A., 3,811,330.
Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. Derivatives of p-aminoalkylbenzene sulfonamide. 3,812,144, Cl. 260-309.700.
Dillenschneider, Jean-Paul, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Vulcanization of EPDM elastomers. 3,812,087, Cl. 260-79.50c.
Dinger, Edward H., to General Electric Company. Current limit circuit for a DC motor. 3,812,409, Cl. 318-310.000.
Dipietro, Joseph; and Stepniczko, Heintich E., to Michigan Chemical Corporation. Apparatus for the determination of flammability and smoke density of polymers. 3,811,839, Cl. 23-253.0pc.
Dirne, Adrianus Petrus: *See—*
Asselman, George Albert Apolonia; and Dirne, Adrianus Petrus, 3,811,496.
Ditman, John G.: *See—*
Morfit, Oliver; and Ditman, John G., 3,811,843.
Dittrich, Robert George; Secord, Dean Brian; and Thelemaque, Louis Emanuel, to Bell Telephone Laboratories, Incorporated. Communication system switching network. 3,812,298, Cl. 179-18.0ea.
Dix, Rollin C. Mobile roadway repair unit. 3,811,147, Cl. 14-1.000.
Do All Company: *See—*
Anderson, William T., 3,811,179.
Dobo, Emerick J., to Monsanto Company. High speed production of filaments from low viscosity melts. 3,811,850, Cl. 65-1.000.
Doi, Tadashi, to Kao Soap Co., Ltd. Flexible pavement coating method. 3,811,911, Cl. 117-33.000.
Dolle, Waldemar: *See—*
Sundermann, Erich; and Viedt, Johanna (said Sundermann assor. to), 3,811,815.
Dombrowski, Ted A.: *See—*
Mansnerus, John A.; and Dombrowski, Ted A., 3,811,817.
Dominion Auto Accessories Limited: *See—*
Brudy, Peter E., 3,811,715.
Doncer, Alex J.; and White, Harold R., to Alar Engineering Corporation. Proportional sampling apparatus and method. 3,811,324, Cl. 73-421.00b.
Dorchak, Thomas P.: *See—*
Santangelo, Joseph G.; and Dorchak, Thomas P., 3,812,017.
Dostal, Zdenek Denny, to International Playtex Corporation. Absorbent material and methods of making the same. 3,811,445, Cl. 128-285.000.
Douglas, Frank C.; Gregory, Thomas K.; and Stielau, Robert W., to United Aircraft Corporation. High frequency heating method for vapor deposition of coatings onto filaments. 3,811,940, Cl. 117-228.000.
Dover Corporation: *See—*
Wood, Chester W., 3,811,486.
Dow Chemical Company, The: *See—*
Bieler, Barrie H.; Morgan, David C.; and Guebert, Kenneth W., 3,811,870.
Schmidt, Donald L.; Daniels, Arthur L.; and Petrella, Ronald V., 3,812,244.
Dow Corning Corporation: *See—*
Bey, Alvin E., 3,812,201.
Dennis, William E.; and Vogel, George E., 3,812,081.
Schulz, Jay R., 3,812,164.
Dresser Industries, Inc.: *See—*
Platt, Richard O., 3,811,808.
Driver, W. B. Remote control directional drilling system. 3,811,519, Cl. 175-73.000.
Drouhard, Alfred J., Jr.; and Weeks, John R., Jr., to Mansfield Sanitary, Inc. Flush control system. 3,811,135, Cl. 4-76.000.
Drzewiecki, Tadeusz M., to United States of America, Army. Pure fluidic de-coupler. 3,811,476, Cl. 137-842.000.
Du Bell, Thomas Loyd: *See—*
Taylor, Jack Rogers; and Du Bell, Thomas Loyd, 3,811,278.
Du Pont de Nemours, E. I., and Company: *See—*
Borchardt, Hans J., 3,812,040.
Dempsey, James Joseph; and Smith, Drexel Kermit, 3,811,979.
Johnson, Daniel D., 3,811,848.
Otterstedt, Jan-Erik Anders; and Pater, Richard, 3,812,123.
Rennolds, Philip Jackson, 3,811,942.
Short, Oliver A.; and Weaver, Richard V., 3,811,906.
Stalter, Neil J., 3,811,833.
van der Linde, Willem B.; and Weslager, Clinton A., 3,812,043.
Yuan, Edward L., 3,811,997.
Duffy, James J.: *See—*
Goldborn, Peter; and Duffy, James J., 3,812,218.
Dugan, Mary Ann, to Research Corporation. Novel compositions for radiotracer localization of deep vein thrombi. 3,812,245, Cl. 424-1.000.
Dula, Alfred A.; and Wehring, Elwood, to Pipe Specialties, Inc. Sealed tubular joint. 3,811,710, Cl. 285-55.000.
Dulog, Lothar G.; and Dewaele, Sylvain A. R., to S.A. Texaco Belgium N.V. Lubricating compositions containing benzo-(1',3',2-)dioxaphosphiles. 3,812,033, Cl. 252-46.700.
Dumas, Christ J.: *See—*
Simovits, Stephen S., Jr.; and Dumas, Christ J., 3,812,450.
Duncan, Eathel Lee, to Goodyear Tire & Rubber Company, The. Tire with an upper sidewall protector. 3,811,488, Cl. 152-209.00r.
Duncan, Larry K., to Grace, W. R., & Co. Process for separating cerium concentrate from ores. 3,812,233, Cl. 423-21.000.
Dunham-Bush, Inc.: *See—*
Moody, Harold W., Jr.; and Schaefer, Donald D., 3,811,805.
Dunkelberger, David L., to Rohm & Haas Company. Process for preparing graftlinked heteropolymer film. 3,812,205, Cl. 260-885.000.
Dunkleberger, La Rue Norman; and Shen, Lawrence Yun Lung, to Bell Telephone Laboratories, Incorporated. Ultrahigh vacuum sublimation pump. 3,811,794, Cl. 417-49.000.
Dunmyer, Joseph C., Jr.; and Godino, Rino L., to Wheeler, Foster, Corporation. Rotating disc contractor draw-off system. 3,811,844, Cl. 23-270.500.
Dunn, Kathy A.: *See—*
Glass, Marvin I.; and Dunn, Kathy A., 3,811,220.
Durchkeimer, Walter: *See—*
Schorr, Manfred; Durchkeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,812,131.
Duro-Test Corporation: *See—*
Koo, Ronald C.; and Shurgan, Joel, 3,812,393.
Duwel, Dieter: *See—*

Schorr, Manfred; Durchkeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,812,131.
Dye, John F., to Kendall Company, The. Receptacle closure cap. 3,811,592, Cl. 215-307.000.
Dzus Fastener Co., Inc.: *See—*
Schenk, Peter, 3,811,157.
E. & A. Becker KG, Maschinen- und Getriebebau: *See—*
Moogk, Friedrich, 3,811,331.
E. & F. Horster, Firma: *See—*
Heckhausen, Hans, 3,811,347.
Earle, Paul Lewis; Musz, Andrew; and Vandervelden, Jan Josef Maria, to Johns-Manville Corporation. Vibration impact texturing apparatus. 3,811,814, Cl. 425-385.000.
E'Ascoli, Ralph C.: *See—*
Kothe, Erich W.; Ebel, Lawrence C.; and E'Ascoli, Ralph C., 3,812,283.
Eastman Kodak Company: *See—*
Babbitt, John M.; Spayd, Richard W.; and Irani, Nayyir F., 3,811,897.
Darlak, Robert S.; and Wright, Charles J., 3,811,891.
Edwards, Evan A., 3,811,634.
Ehrlich, Sanford H., 3,811,895.
Endter, Dale S.; and Miller, Edwin E., 3,811,201.
Ernisse, Paul J.; and Ettinger, Arnold J., 3,812,500.
Ernisse, Paul Justin; and Mindler, Fredric Alton, 3,812,498.
Fisher, John G.; and Clark, Gary T., 3,812,093.
Gallagher, John F.; and Salo, Martin, 3,811,924.
Goddard, William H., 3,811,635.
Herz, Arthur Herman; and Westcott, Edwin Russell, 3,811,896.
Marchant, John C.; and Tinney, John R., 3,811,885.
Eaton Corporation: *See—*
Goscenski, Edward J., Jr., 3,811,341.
Eaves, Robert B., to Photo-Motion Corporation. Moire motion illusion apparatus and method. 3,811,213, Cl. 40-106.530.
Ebco Manufacturing Company: *See—*
Taylor, William, 3,811,294.
Ebel, Lawrence C.: *See—*
Kothe, Erich W.; Ebel, Lawrence C.; and E'Ascoli, Ralph C., 3,812,283.
Eby, Clyde Richard, to Cincinnati Milacron Inc. Quick change guard for tool and cutter grinder. 3,811,233, Cl. 51-269.000.
Eckdahl, Thomas H.: *See—*
Schilling, Paul K.; and Eckdahl, Thomas H., 3,811,560.
Eckdahl, Thomas H.; and Bateman, Robert F., to Plastics, Inc. Interlocking serving tray. 3,811,595, Cl. 220-23.400.
Eckert, Konrad; and Knapp, Heinrich, to Bosch, Robert, G.m.b.H. Control device for a fuel injection system. 3,811,419, Cl. 123-119.00r.
Economou, George J. Swinging doors. 3,811,222, Cl. 49-9.000.
Economou, George J. Adhesive tapes and bandages. 3,811,438, Cl. 128-156.000.
Ecoplastics Limited: *See—*
Guillet, James Edwin, 3,811,931.
Edax International, Inc.: *See—*
Walsh, Charles J.; and Barnhart, Morris W., 3,812,288.
Eddy, William R., to Phillips Petroleum Company. Apparatus and method for orienting articles. 3,811,551, Cl. 198-33.00r.
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Piperazinyl substituted alkoxy benzophenones. 3,812,129, Cl. 260-268.0ph.
Edwards, Evan A., to Eastman Kodak Company. Cartridge stripping. 3,811,634, Cl. 242-55.000.
Edwards, Kenneth F.; and Vogel, Ralph A., to Essex International, Inc. Rod handling apparatus. 3,811,610, Cl. 226-171.000.
Egan, Georgette S., to Hughes Aircraft Company. Working surface for radiant energy beam cutter. 3,811,554, Cl. 198-131.000.
Ehrlich, Sanford H., to Eastman Kodak Company. Sensitized compounds and elements. 3,811,895, Cl. 96-88.000.
Eichinger, John W., to Buckeye Forge Division-Gulf & Western Industrial Products Company. Method of assembling closure member for metal containers. 3,811,174, Cl. 29-453.000.
Eifler, Raymond J.; and Hennessey, Walter F., to Bendix Corporation, The. Rear release contact retention assembly. 3,812,447, Cl. 339-59.00r.
Eisenwerke Gesellschaft Maximilianshutte m.b.H.: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans George, 3,811,386.
Eldby, Per: *See—*
Wessel, Per Christian; and Eldby, Per, 3,811,396.
Electronic Memories & Magnetics, Inc.: *See—*
Kvaternik, Joseph, 3,812,311.
Electronic shutter for photographic cameras: *See—*
Shimizu, Munetaka; and Takayama, Masao, 3,812,512.
Electroprint, Inc.: *See—*
Blake, David E., 3,811,765.
Elektriska Svetsningsaktiebolaget: *See—*
Tholander, Lars Helge; and Thostrup, Harry, 3,811,611.
Elliott, James B., to United Corporation. Scanning camera. 3,812,505, Cl. 95-11.000.
Ellis, John L.: *See—*
Weinstein, Martin; Singhal, Subhash C.; and Ellis, John L., 3,811,961.
Elm, Robert A., to Minnesota Mining and Manufacturing Company. Terminal strip. 3,812,449, Cl. 339-98.000.
Elmessaar, Heino: *See—*
Blomberg, Jarl Joel; Elmessaar, Heino; and Karden, Karl Gosta, 3,811,514.
ELTHRA Corporation: *See—*
Van Gilder, Burrows Corson; and Moyer, Elmo Emerson, 3,812,415.
Emura, Tomoyuki: *See—*
Ito, Ikoh; Sekihara, Takeshi; Emura, Tomoyuki; and Ueda, Takeshi, 3,812,073.
Enderlein, Hans Dieter Friedrich Konrad, to Sowell, John B., mesne. Semiconductor wafer transport device. 3,811,825, Cl. 432-122.000.
Enderlein, Hans Dieter Friedrich Konrad, to Sowell, John B., mesne. Diffusion furnace process tube. 3,811,826, Cl. 432-200.000.
Endo, Takaya: *See—*
Kagami, Teruo; Fujiwhara, Mitsuto; and Endo, Takaya, 3,811,892.
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, to Fuji Photo Film Co., Ltd. Light-sensitive photographic material with antistatic layer. 3,811,889, Cl. 96-67.000.
Endter, Dale S.; and Miller, Edwin E., to Eastman Kodak Company. Apparatus for drying a photographic material. 3,811,201, Cl. 34-54.000.
Engelbrecht, Eduard. Method and apparatus for delivering a predetermined volume of a liquid. 3,811,484, Cl. 141-7.000.
Engelhardt, Edward L.; and Christy, Marcia E., to Merck & Co., Inc. Chemical compounds and processes for preparing same. 3,812,177, Cl. 260-501.210.
Engelsmann, Dieter; Wagensonner, Eduard; Rieder, Alois; and Von Fischern, Bernhard, to Agfe-Gevaert Aktiengesellschaft. Exposure indicator for a photographic camera. 3,812,503, Cl. 354-60.000.
Engineering Concrete Placer, Inc.: *See—*
Semple, Charles A., 3,811,802.
English, Jackson Pollard; and Berkelhammer, Gerald, to American Cyanamid Company. N-(2,2-Diloweralkoxyalkyl)-2,2-diloweralkoxylower-alkanamidines and their acid addition salts. 3,812,189, Cl. 260-564.00r.
Enterprise Brass Works: *See—*
Nelson, Lowell F., 3,811,456.
Environeering, Inc.: *See—*
Huppke, Glen P., 3,811,247.
Environment/One Corporation: *See—*
La Violette, Fred G., 3,812,370.
Environmental Research & Technology, Inc.: *See—*
Blau, Henry H., Jr., 3,811,776.
Eprova Aktiengesellschaft: *See—*
Suter, Hans; Zutter, Hans; and Muller, Hans Rudolf, 3,812,186.
Epstein, Irving. Releasable hook. 3,811,720, Cl. 294-83.00r.
Epstein, Lewis: *See—*
Baus, Rene, Jr.; and Epstein, Lewis, 3,811,770.
Epstein, Paul: *See—*
Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,811,428.
Erickson, Lars E.: *See—*
Floyd, Alfred E.; and Erickson, Lars E., 3,811,717.
Erickson, William R. Closed loop system for the elimination of fluorine pollution from phosphoric plants. 3,811,246, Cl. 55-71.000.
Ernisse, Paul J.; and Ettinger, Arnold J., to Eastman Kodak Company. Automatic shutter control for photographic cameras. 3,812,500, Cl. 354-32.000.
Ernisse, Paul Justin; and Mindler, Fredric Alton, to Eastman Kodak Company. Shutter diaphragm apparatus for camera exposure control. 3,812,498, Cl. 354-29.000.
Ernsberger, Fred M.; and Nier, Thomas J., to PPG Industries Inc. Method and apparatus for mixing molten glass by bubbling. 3,811,858, Cl. 65-135.000.
Ernsberger, Fred M., to PPG Industries, Inc. Process and apparatus for electrolytically generating stirring bubbles in a glass melt. 3,811,859, Cl. 65-136.000.
ESB Incorporated: *See—*
Johnson, Robert William; and Shanker, Irvin Paul, 3,811,759.
Reinert, Donald G., 3,811,956.
Esco Corporation: *See—*
Smith, Floyd O., 3,811,270.
Esquire Inc.: *See—*
McNamara, Albert C., Jr., 3,812,342.
Esser, Franz; Hanstein, Friedrich; Hosch, Ludwig; and Mueller, Dieter, to Rohm GmbH. Structural elements of reduced inflammability. 3,812,208, Cl. 260-899.000.
Essex International, Inc.: *See—*
Edwards, Kenneth F.; and Vogel, Ralph A., 3,811,610.
Esso Research and Engineering Company: *See—*
Buntin, Robert R., 3,811,957.
Esten, Harold. Ballcock. 3,811,464, Cl. 137-414.000.
Estradier, Francoise: *See—*
Bugaut, Andree; and Estradier, Francoise, 3,811,831.
Eta Francais represente par le Ministre d'Etat Charge de la Defense Nationale, Delegation Ministerielle pour l'Armement Quai Henri: *See—*
Bertrand, Yves; and Grebert, Robert, 3,811,969.
Ethyl Corporation: *See—*
Hall, Crayton G., 3,812,213.
Kirsch, Warren B., 3,812,237.
Laran, Roy J.; Kobetz, Paul; and Johnson, Robert W., Jr., 3,812,195.
Niebylski, Leonard M.; and Brendel, Gottfried J., 3,811,972.

Ettinger, Arnold J.: *See—*
Ernisse, Paul J.; and Ettinger, Arnold J., 3,812,500.
Evans, Dewey M.; and Johnson, Willard L., to Devansco, Inc. Air cleaning device. 3,811,252, Cl. 55-228.000.
Everitt, Scott F., to Indiana National Bank, The, mesne. Sound reproduction system. 3,811,532, Cl. 181-156.000.
Faffaelli, Joseph Gino; and Palmer, Reed Albert, to International Telephone and Telegraph Corporation. Glow coil ignitor. 3,812,324, Cl. 219-553.000.
Fagen, John. Universal engine head lift. 3,811,576, Cl. 212-35.00r.
Faiss, Gerhard: *See—*
Kaiser, Gerhard; and Faiss, Gerhard, 3,811,556.
Faiveley S.A.: *See—*
Leger, Roland, 3,812,304.
Fanti, Roy: *See—*
Kuehl, Donald K.; Fanti, Roy; and Galasso, Salvatore F., 3,811,930.
Farber, Sheldon; and Wright, Arthur J., to National Cash Register Company, The. Phthalide. 3,812,146, Cl. 260-326.1yr.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Buschmann, Lothar; Prave, Paul; and Sukatsch, Dieter, 3,812,012.
Heise, Hartmut; and Mees, Bernhard, 3,812,138.
Hirschberg, Klaus; and Kramer, Lothar, 3,812,231.
Kleiner, Hans-Jerg; and Rittner, Siegbert, 3,812,222.
Kuhlkamp, Alfred; Rauterkus, Karl Josef; Schaefer, Horst; and Seip, Detlev, 3,812,072.
Landler, Josef; and Spietschka, Ernst, 3,812,130.
Merkle, Kurt; Fuchs, Otto; Troster, Helmut; and Noetzel, Siegfried, 3,812,051.
Noetzel, Siegfried, 3,812,053.
Noetzel, Siegfried; and Fischer, Edgar, 3,812,054.
Schorr, Manfred; Durchkeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,812,131.
Stache, Ulrich; Radscheit, Kurt; Firtsch, Werner; and Haede, Werner, 3,812,106.
Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,812,185.
Faress, Sidney M., to Uniroyal Inc. Thomas, Dallas C. Ironer roll cover and method. 3,811,164, Cl. 28-128.000.
Farnam, F. D., Co.: *See—*
Farnam, Robert G., 3,811,689.
Farnam, Robert G., to Farnam, F. D., Co. Preformed bushing. 3,811,689, Cl. 277-166.000.
Farnsworth, Richard G., to General Electric Company. Solid state totalizer. 3,812,385, Cl. 397-243.000.
Farr, Glyn Phillip Reginald, to Girling Limited. Brake adjusters. 3,811,538, Cl. 188-79.5ge.
Farr, Glyn Phillip Reginald, to Girling Limited. Internal shoe-drum brakes. 3,811,539, Cl. 188-106.00a.
Fassbinder, Hans George: *See—*
Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans George, 3,811,386.
Fassell, Wayne M., to Philco-Ford Corporation. Refractory article having high thermal shock resistance. 3,811,900, Cl. 106-55.000.
Faustel, Inc.: *See—*
Abler, Norman C., 3,811,637.
Fedders Corporation: *See—*
Bellmer, Friedrich O., 3,811,468.
Osterkorn, Charles Louis; Buck, Leo V.; Kloos, William W.; and Marino, Salvatore M., 3,812,322.
Federspiel, Joseph A., to FMC Corporation. Latch mechanism. 3,811,338, Cl. 74-527.000.
Feiner, Alfred, to Strabag Beu-A.G. Dam having contoured internal apron. 3,811,286, Cl. 61-31.000.
Feingold, Michael: *See—*
Bader, Henry; Feingold, Michael; and Jahngen, Edwin G., Jr., 3,812,191.
Feist, Karl K. Slide retainer and positioner. 3,811,645, Cl. 249-68.000.
Feldman, Allan Murray, to American Cyanamid Company. Nickel and cobalt dicyclohexylidithio-phosphinates as flame-retardants for styrene polymers. 3,812,080, Cl. 260-45.75r.
Felix, Ernst, to Zellweger, Ltd., Uster Factories for Apparatus and machines. Systems for monitoring yarns in multicoil production textile machines. 3,811,261, Cl. 57-81.000.
Feliz, Jack M. Recreational vehicle utility stowage and transfer system. 3,811,462, Cl. 137-344.000.
Felton, Lloyd Crosser. Dropper and stirrer dispensing a single drop. 3,811,603, Cl. Hynson, Westcott & Dunning, I.
Ferguson, Hugo S., to Reel Vortex, Inc. Cross-flow mower with canted reel and three-wheel suspension. 3,811,255, Cl. 56-13.300.
Ferraro, John J.; and McDonald, Bertrand Norval, to Babcock & Wilcox Company, The. Industrial technique. 3,811,498, Cl. 165-161.000.
Ferrell, Robert G. Stoma filter guard. 3,811,436, Cl. 128-140.000.
Ferro, Armand P.: *See—*
Kurz, Bruno F.; and Ferro, Armand P., 3,812,518.
Ferro Corporation: *See—*
Oswitch, Stanley; and Kipp, Kevin K., 3,812,074.
Fiber Industries, Inc.: *See—*
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, 3,811,264.
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., to FMC Corporation. Smoke spotting cartridge. 3,811,381, Cl. 102-66.000.
Fiddes, Derek Edward, to Protective Plastics Limited. Swimming pool coping. 3,811,236, Cl. 52-102.000.
Fietz, Erwin: *See—*
Schmidt, Helmut, 3,811,459.
Fines Lille-Cail: *See—*
Giorgi, Jean Claude, 3,811,624.
Fingerson, Conrad Ferdinand: *See—*
Charlson, Paul Marlin; Den Tex, Karel; and Fingerson, Conrad Ferdinand, 3,811,377.
Fink, John. Hat-skeet or cup-skeet. 3,811,678, Cl. 273-126.00r.
Fink, Wilfried. Universal holder for thread cutting dies. 3,811,145, Cl. 10-123.00p.
Finnin, George R., to Sperry Rand Corporation. I/O device reserve system for a data processor. 3,812,471, Cl. 340-172.500.
Firtsch, Werner: *See—*
Stache, Ulrich; Radscheit, Kurt; Firtsch, Werner; and Haede, Werner, 3,812,106.
Fischer, Arthur. Flexible member and arcuate member attachable thereto for imparting curvature. 3,811,219, Cl. 46-25.000.
Fischer, Edgar: *See—*
Noetzel, Siegfried; and Fischer, Edgar, 3,812,054.
Fisher, John G.; and Clark, Gary T., to Eastman Kodak Company. Cationic thiadiazolyl monoazo dyes. 3,812,093, Cl. 260-146.00r.
Fisher, John M., to Goodrich, B. F., Company, The. Escape slide assembly. 3,811,534, Cl. 182-48.000.
Fiskin, Alexandr Mikhailovich: *See—*
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich, 3,811,812.
Flachglas Aktiengesellschaft Delog-Detag: *See—*
Glaser, Hans-Joachim, 3,811,934.
Flamand, Guy Antoine: *See—*
Vermeerbergen, Leon Roger; and Flamand, Guy Antoine, 3,811,588.
Flambeau Products Corporation: *See—*
Sauey, Lawrence K.; Mason, Leroy W.; and Rau, Gerald A., 3,811,216.
Fleischer, Helen Krohn: *See—*
Fleischer, Oscar, 3,811,215.
Fleischer, Oscar; deceased (by Fleischer, Helen Krohn; executrix). Locking device for fishing rods. 3,811,215, Cl. 43-18.00r.
Fleischer, Robert L.; and Price, Paul B., to General Electric Company. Etchable copolymer body. 3,811,999, Cl. 161-109.000.
Fleischfresser, Gerald H.; and Mila, Truman R., to GTE Automatic Electric Laboratories, Incorporated. Arrangement for protecting a common highway in a common control communication switching system. 3,812,299, Cl. 179-18.0ah.
Fleissner, Heinz, to Vepa AG. Apparatus for continuous bonding of felt materials by sequential heating and cooling operations. 3,811,988, Cl. 156-498.000.
Flider, Frank S., to Justrite Manufacturing Company, The. Safety container for inflammable fluids. 3,811,605, Cl. 222-472.000.
Flogaus, William S.; Graves, Howard T.; Orlando, Harold J.; and Van Der Laske, Dennis P., to United States of America, Army. Miniature infrared short range thermal imager (MISTI). 3,812,357, Cl. 250-332.000.
Flory, Robert Earl, to RCA Corporation. Two color medium for full color TV film system. 3,812,528, Cl. 358-49.000.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., to Texaco Inc. Surfactant oil recovery process usable in formations containing water having high concentrations of polyvalent ions such as calcium and magnesium. 3,811504, Cl. 166-273.000.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., to Texaco Inc. Surfactant oil recovery process usable in formations containing water having high concentrations of polyvalent ions such as calcium and magnesium. 3,811505, Cl. 166-274.000.
Flournoy, Kenoth H.; and Shupe, Russell D., to Texaco Inc. Surfactant oil recovery process usable in formation containing water having high concentration of polyvalent ions such as calcium and magnesium. 3,811,507, Cl. 166-274.000.
Flow Research, Inc.: *See—*
Olsen, John H., 3,811,795.
Floyd, Alfred E.; and Erickson, Lars E., to Sargent and Company Division of Walter Kidde & Co. Latch bolt stop lever for fire door lock sets. 3,811,717, Cl. 292-92.000.
Fluck, Josef: *See—*
Zaugg, Roland; and Fluck, Josef, 3,811,267.
Flynn, James P., to Philco-Ford Corporation. Air conditioner condensate disposal apparatus. 3,811,293, Cl. 62-280.000.
Flynn, William T.: *See—*
Wolf, Erich L.; and Flynn, William T., 3,811,522.
FMC Corporation: *See—*
Brown, Martin S.; and Avramidis, Stellios A., 3,811,332.
Federspiel, Joseph A., 3,811,338.
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., 3,811,381.
Shirley, Joseph Floyd; Caropreso, Frank Edward; and Fraser, George Lamar, 3,811,569.
Ford, James A.: *See—*
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., 3,811,874.
Ford Motor Company: *See—*

Allison, William D., 3,811,337.
Bauer, David J., 3,811,725.
Dehar, David C., 3,811,650.
Glance, Patrick M., 3,811,698.
Jaklevic, Robert C.; Lambe, John J.; and Mikkor, Mati, 3,811,752.
Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, 3,811,910.
Minck, Robert W.; and Tischer, Ragnar P., 3,811,943.
Pink, Frank A., 3,811,647.
Pink, Frank A., 3,812,323.
Radin, Bernard G., 3,812,401.
Woodward, Gary F., 3,812,331.
Woodward, Gary F., 3,812,332.

Forest, Edward, to Xerox Corporation. Apparatus for photoelectrophoretic imaging using a periodic electric field. 3,811,764, Cl. 355-3.00p.

Forssman, Jan Robert Fleming, to Safety Vehicles Development AB. Silencer. 3,811,531, Cl. 181-50.000.

Foseco International, Ltd.: *See—*
Rumbold, Bernhard Carl; and Cartwright, John Edward, 3,811,898.

Foster Grant Co., Inc.: *See—*
Killian, Charles R., 3,811,318.

Foster, Howard F. Tensioning device. 3,811,655, Cl. 254-161.000.

Foster Wheeler Corporation: *See—*
Morfit, Oliver; and Ditman, John G., 3,811,843.

Fothergill, Graham Alwyn: *See—*
Osbond, John Mervyn; and Fothergill, Graham Alwyn, 3,812,133.

Fowler, James McFarland, Jr., to Becton, Dickinson and Company. Contamination control apparatus. 3,811,250, Cl. 55-274.000.

Fox, William L., II. Package structure. 3,811,563, Cl. 206-459.000.

Frankenberg, Henry E.; and Peyser, Harry A., to Continental Can Company. Plastic container. 3,811,597, Cl. 220-60.00r.

Franklin Gno Corporation: *See—*
Wernlund, Roger F.; Carroll, David I.; Kilpatrick, Wallace D.; and Cohen, Martin J., 3,812,355.

Franzmair,: *See—*
Bretschneider, Hermann; Klotzer, Wilhelm; and Franzmair,, 3,812,170.

Fraser, George Lamar: *See—*
Shirley, Joseph Floyd; Caropreso, Frank Edward; and Fraser, George Lamar, 3,811,569.

Frazier, Alvin W.: *See—*
Wennerberg, Arnold N.; and Frazier, Alvin W., 3,812,028.

Frederick, Norman L.; and Bennett, Charles L., to General Dynamics Corporation. Plunge milling tool. 3,811,163, Cl. 29-103.00a.

Fredsted, Tage: *See—*
Kroyer, Karl Kristian Kobs; and Fredsted, Tage, 3,811,905.

Freeman, Gene G.: *See—*
Cummings, Alan F.; and Freeman, Gene G., 3,811,633.

Frenkel, Shiman Tevelievich; Skripko, Gely Fomich; Golub, Georg Froimovich; Prudnikov, Evgeny Leonidovich; and Ganelin, Naum Borisovich. Tool for drilling holes and cutting slots. 3,811,520, Cl. 175-398.000.

Frey, Christoph: *See—*
Zographos, Georg; and Frey, Christoph, 3,811,883.

Friedman, Robert H., to Getty Oil Company. Methods for selective plugging. 3,811,508, Cl. 166-288.000.

Fries, Hjalmar Elias, to International Standard Electric Corporation. Check valve for pump or the like. 3,811,469, Cl. 137-525.100.

Fritzsche Dodge & Olcott Inc.: *See—*
Gilbertson, Gilbert, 3,812,263.

Fritzsche, Donald E., to General Electric Company. Electric broiler. 3,811,375, Cl. 99-425.000.

Frohberg, Gunther, to Pierburg, A., Auto- und Luftfahrt-Geratebau KG. Diaphragm pump. 3,811,803, Cl. 417-458.000.

Frosst, Charles E., & Co.: *See—*
Wasson, Burton K.; and Williams, Haydn W. R., 3,812,150.
Wasson, Burton Kendall, 3,812,125.
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,812,182.

Fry, Peter William, to Integrated Photomatrix Limited. Device for comparing the magnitudes of electrical quantities. 3,812,431, Cl. 328-137.000.

Fryer, Edward R. Seal ring for nuclear reactors. 3,812,008, Cl. 176-30.000.

Fuchs, Otto: *See—*
Merkle, Kurt; Fuchs, Otto; Troster, Helmut; and Noetzel, Siegfried, 3,812,051.

Fudemoto, Isao; Kubota, Shiegeki; and Hayashi, Tatsuki. Waveform equalizer system. 3,812,436, Cl. 333-18.000.

Fuji Photo Film Co., Ltd.: *See—*
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, 3,811,889.
Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo, 3,811,884.
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,811,913.
Ohta, Noboru; Oishi, Yasushi; and Ueda, Hirozo, 3,811,890.
Okutsu, Toshimitsu; Tsuji, Nobuo; Ohi, Reiichi; and Kondo, Tokiharu, 3,812,079.
Sato, Hiroshi; Nishio, Daijiro; and Takahashi, Takeshi, 3,812,145.
Shibaoka, Haruo; and Matsushita, Sachio, 3,811,888.
Yonezawa, Teruhiko; and Shirai, Akira, 3,811,894.

Fujimoto, Sakae: *See—*
Ohta, Wasaburo; Kasuya, Kazuhiko; Fujimoto, Sakae; and Yamauchi, Masayuki, 3,811,828.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.

Fujitsu Limited: *See—*
Kobayashi, Kengo; Hattori, Seiichi; and Tamura, Masaharu, 3,811,345.

Fujiwhara, Mitsuto: *See—*
Kagami, Teruo; Fujiwhara, Mitsuto; and Endo, Takaya, 3,811,892.

Fukuda, Shuzo: *See—*
Hosoe, Toshiaki; Okami, Yuji; Michishita, Katsumi; and Fukuda, Shuzo, 3,812,373.

Fuller Company: *See—*
Warshawsky, Jay, 3,811,823.

Funk, Albert G.: *See—*
Cook, Melvin Alonzo; Funk, Albert G.; and Hansen, Gary L., 3,811,971.

Funke, Maurice F.; and Bald, James F., Jr., to United States of America, Army. Energy deposition chemical transducer utilized in flueric sensing system. 3,812,368, Cl. 250-432.000.

Furukawa Electric Company Limited, The: *See—*
Hosoda, Kirokuro; and Shiina, Naonori, 3,812,225.

Gabbard, Ova G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., 3,812,430.

Gabler, Rudolf; and Studinka, Josef, to Inventa AG fur Forschung und Patentverwertung. Process for the manufacture of polythiobisphenols. 3,812,192, Cl. 260-608.000.

Gaccetta, Richard. Device for teaching alphabetic order. 3,811,206, Cl. 35-35.00h.

Galasso, Francis S.; and Jacob, Bernarr A., to United Aircraft Corporation. Silicon carbide surfaced filaments with titanium carbide coating. 3,811,920, Cl. 117-69.000.

Galasso, Salvatore F.: *See—*
Kuehl, Donald K.; Fanti, Roy; and Galasso, Salvatore F., 3,811,930.

Galion, Jeffrey, Inc.: *See—*
Kuenzig, Fred J.; and Montano, Joseph V., 3,811,334.

Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., to Nupro Company. Bellows sealed butterfly valve. 3,811,651, Cl. 251-335.00b.

Gallagher, Cornelius A.; and Glazar, Arthur J., to Servo Corporation of America. Roller bearing discriminator for a railroad hot box detector system. 3,812,343, Cl. 246-169.00a.

Gallagher, John F.; and Salo, Martin, to Eastman Kodak Company. Article of manufacture having a glossy substrate surface coated with a matte surface coating. 3,811,924, Cl. 117-76.00p.

Gallup, Raymond Charles; and Riley, Richard Edward, to Precision Processes (Textiles) Limited. Treatment of wool. 3,811,835, Cl. 8-128.00a.

Galowin, Lawrence S.: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,811,493.

Galy, Georges, to Societe d'Etudes de Poly-techniques Sepotec. Optical matrix for reading coded information on cards. 3,812,326, Cl. 235-61.11e.

Gamarra, Jose P.; Swidler, Ronald; and Wilson, Katherine W., to Cotton Incorporated. Durable press process for treating cellulosic material with methylolamides and acetic acid or formic acid vapors. 3,811,131, Cl. 2-243.000.

Gamaury, Jean-Francois: *See—*
d'Albignac, Jean Marie Louis Jules; and Gamaury, Jean-Francois, 3,811,836.

Ganelin, Naum Borisovich: *See—*
Frenkel, Shiman Tevelievich; Skripko, Gely Fomich; Golub, Georg Froimovich; Prudnikov, Evgeny Leonidovich; and Ganelin, Naum Borisovich, 3,811,520.

Gangelhoff, Fred R.; and Beyer, Harry A. Knife grinding and honing machine. 3,811,226, Cl. 51-8.00r.

Gardella, Adriano. Selvedge forming apparatus in shuttleless looms. 3,811,479, Cl. 139-124.00a.

Gardner, Ross, Jr., to Cabot Corporation, mesne. Earplugs. 3,811,437, Cl. 128-152.000.

Garner, Paul Johnson; and Collins, Thomas Robert Stephen, to Imperial Chemical Industries, Limited. Method of making a split mold. 3,811,175, Cl. 29-464.000.

Garrett Corporation, The: *See—*
McInerney, Charles E.; and Winiarz, Olgiero S., 3,811,741.

Garrison, Elbert W. Pet door panel. 3,811,224, Cl. 49-168.000.

Garth, Emory C., to Texas Instruments, Incorporated. High density digital systems and their method of fabrication with liquid cooling for semiconductor circuit chips. 3,812,402, Cl. 317-100.000.

Gartner, Klaus W.; and Phillips, Peter. Liquid concentrate and water mixing and dispensing device. 3,811,618, Cl. 239-312.000.

Gartner, Klaus W. Electronic combination lock including sequential signal generator and signal display. 3,812,403, Cl. 317-134.000.

Gash, Virgil W.; and Bissing, Donald E., to Monsanto Company. Preparation of monohaloacetyl halides. 3,812,183, Cl. 260-544.00y.

Gasparaitis, Bernard; and Maloney, Dennis J., to Motorola, Inc. Sealed printed circuit jack plug connector. 3,812,310, Cl. 200-51.00r.

Gaughan, Edmund J., to Stauffer Chemical Company. Certain phosphorus-containing imino oxazolidines, thiazolidines and perhydrooxazines. 3,812,117, Cl. 260-243.00r.

Gaydasch, Alexander, to Universal Oil Products Company. Pour point depression. 3,812,034, Cl. 252-57.000.

Ge-Na-Geschenke Gebr. Nagel KG: *See*—
Stoff, Werner, 3,811,990.

Gebhardt, Otto R., to Mueller Ernst, K.G., Firma. Head for powder spraying gun. 3,811,620, Cl. 239-499.000.

Gebhardt, Wallace A.: *See*—
Wolf, Walter A.; Corn, Prentice R.; and Gebhardt, Wallace A., 3,812,313.

Gebr. Buhler Nachfolger GmbH: *See*—
Schaub, Gerhard; and Schramm, Karl, 3,812,410.

GEC-Elliott Automation Limited: *See*—
Barraclough, Christopher George; and Brown, James Roger, 3,812,491.

General Dynamics Corporation: *See*—
Frederick, Norman L.; and Bennett, Charles L., 3,811,163.

General Electric Company: *See*—
Allison, James E.; and Boecker, Bob F., 3,811,600.
Barkan, Philip; Kelley, Fred W., Jr.; and Shook, Theodore A., 3,812,404.
Barton, Sterling C.; and Schmitt, Nickolas, 3,812,392.
Bellamy, Winthrop D.; and Chakrabarty, Anada M., 3,812,013.
Benz, Mark G., 3,811,962.
Boldebuck, Edith M., 3,812,069.
Boston, Ray W., Jr.; and Potts, Larry D., 3,811,370.
Butsch, Richard L.; and Brezosky, Bernard J., 3,811,746.
Dinger, Edward H., 3,812,409.
Farnsworth, Richard G., 3,812,385.
Fleischer, Robert L.; and Price, Paul B., 3,811,999.
Fritzsche, Donald E., 3,811,375.
Gorker, George E., 3,811,304.
Hobbs, Stanley Y., 3,812,077.
Kurz, Bruno F.; and Ferro, Armand P., 3,812,518.
Malone, Paul E., 3,812,377.
Markovitz, Mark, 3,812,214.
Milburn, Frank L., 3,812,316.
Nichols, Gus, 3,812,064.
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,811,184.
Nonken, Gordon C., 3,812,314.
Stefani, Joseph P., 3,812,445.
Taylor, Jack Rogers; and Du Bell, Thomas Loyd, 3,811,278.
Whitman, Nelson, 3,811,816.
Woodmansee, Donald E., 3,811,849.

General Industries, Inc.: *See*—
Gunter, Donald E., 3,812,420.

General Instrument Corporation: *See*—
Baker, Lamar T., 3,812,520.

General Microwave Corporation: *See*—
Hopfer, Samuel, 3,812,438.

General Motors Corporation: *See*—
Guyton, James H., 3,812,381.
Harkrader, Ronald L., 3,811,364.

General Power Corporation: *See*—
Coleman, Richard R., Jr.; and Weber, Helmut E., 3,811,796.

Gerber, Albert: *See*—
Villiger, Felix; and Gerber, Albert, 3,811,480.

Gerding, Charles Christian, to Jones & Laughlin Steel Corporation. Method and apparatus for minimizing surface defects in ITR cast strip. 3,811,491, Cl. 164-87.000.

Geschickter Fund for Medical Research: *See*—
Rice, Leonard M., 3,812,113.

Getty Oil Company: *See*—
Friedman, Robert H., 3,811,508.

Gewerkschaft Eisenhutte Westfalia: *See*—
Sann, Bernhard, 3,811,731.

Ghirga, Marcello: *See*—
Piccolo, Luigi; Calcagno, Benedetto; and Ghirga, Marcello, 3,811,908.
Piccolo, Luigi; Ghirga, Marcello; and Calcagno, Benedetto, 3,812,241.

Ghisoni, Pietro, to Mayer, Vita & C. gia F. lli Vita S.a.s. System to avoid thermal degradation of chemical compounds during the treatment of wood chips. 3,811,993, Cl. 162-18.000.

Gibel, Stephen J. Classifying muffler. 3,811,251, Cl. 55-276.000.

Gilbertson, Gilbert, to Fritzsche Dodge & Olcott Inc. Synergistic compositions of pharmaceutically active substances. 3,812,263, Cl. 424-282.000.

Gilchrist, James L., to Continental Oil Company. Method for determining formation parameters. 3,812,353, Cl. 250-258.000.

Gillette Company, The: *See*—
Sastri, Aiyaswami S., 3,811,189.

Gimenez, German Artigas, to Saint-Gobain Industries. Apparatus for homogenization of molten glass and additives. 3,811,861, Cl. 65-179.000.

Giorgi, Jean Claude, to Fines Lille-Cail. Rotary tubular crusher. 3,811,624, Cl. 241-176.000.

Giraudon, Raymond, to Rhone-Poulenc S.A. Ortho-phenylenediamine derivatives. 3,812,173, Cl. 260-471.00c.

Girling Limited: *See*—
Farr, Glyn Phillip Reginald, 3,811,538.
Farr, Glyn Phillip Reginald, 3,811,539.
Margetts, Hugh Grenville, 3,811,537.
Spinks, Ralph William, 3,811,664.

Glance, Patrick M., to Ford Motor Company. Structure for a motor vehicle. 3,811,698, Cl. 280-106.00r.

Glaser, Hans-Joachim, to Flachglas Aktiengesellschaft Delog-Detag. Heating member. 3,811,934, Cl. 117-212.000.

Glaser, Rudolf; Schmidtchen, Juergen; and Bauer, Peter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Molding composition having improved environmental stress-crack resistance and low-temperature impact strength. 3,812,207, Cl. 260-897.00a.

Glass, John P. Rocket and propellant therefor. 3,811,380, Cl. 102-49.700.

Glass, Marvin, & Associates: *See*—
Glass, Marvin I.; and Dunn, Kathy A., 3,811,220.

Glass, Marvin I.; and Dunn, Kathy A., to Glass, Marvin, & Associates. Rag doll with changeable features. 3,811,220, Cl. 46-135.000.

Glazar, Arthur J.: *See*—
Gallagher, Cornelius A.; and Glazar, Arthur J., 3,812,343.

Glaze, John W., Jr., to Intech Corporation, mesne. Hosiery form. 3,811,607, Cl. 223-74.000.

Glazener, Carey A., to Maremont Corporation. Control means for the builder mechanism of textile yarn twister of like machine. 3,811,628, Cl. 242-26.100.

Globe Safety Products, Inc.: *See*—
Smilg, Benjamin, 3,811,400.

Goda, Kermit J., Jr.; and Aulenbach, Grant M., to Carpenter Technology Corporation. Free machining austenitic stainless steel alloy. 3,811,875, Cl. 75-124.000.

Goddard, William H., to Eastman Kodak Company. Spindle adapter. 3,811,635, Cl. 242-68.300.

Godino, Rino L.: *See*—
Dunmyer, Joseph C., Jr.; and Godino, Rino L., 3,811,844.

Goetz, Albert: *See*—
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,811,834.

Goldborn, Peter; and Duffy, James J., to Hooker Chemical Corporation. Dialkyl alkyl and cyclic phosphoramidomethyl phosphonates. 3,812,218, Cl. 260-926.000.

Goldman, Stanley M., to Stanley, G. M., & Co., Inc. Stock analyzer. 3,811,521, Cl. 177-1.000.

Gollomp, Bernard P., to Bendix Corporation, The. High speed measurement system. 3,812,334, Cl. 235-151.000.

Goloveev, Nail Khabibrakhmanovich: *See*—
Tarnavsky, Abram Lvovich; and Goloveev, Nail Khabibrakhmanovich, 3,811,178.

Golovoy, Amos: *See*—
Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, 3,811,910.

Golub, Georg Froimovich: *See*—
Frenkel, Shiman Tevelievich; Skripko, Gely Fomich; Golub, Georg Froimovich; Prudnikov, Evgeny Leonidovich; and Ganelin, Naum Borisovich, 3,811,520.

Gomm, Walter: *See*—
Brack, Alfred; and Gomm, Walter, 3,812,108.

Goodnow, Warren H.; Cauvin, Sidney L., Jr.; and Simard, Joseph G. C., to Kaiser Aluminum & Chemical Corporation. Control of an aluminum reduction cell. 3,812,024, Cl. 204-67.000.

Goodrich, B. F., Company, The: *See*—
Fisher, John M., 3,811,534.

Goodrich, George W., to Bendix Corporation, The. Flexible membrane display panel for generating characters visible in ambient light. 3,812,490, Cl. 340-324.00r.

Goodyear Aerospace Corporation: *See*—
Batcher, Kenneth E., 3,812,467.

Goodyear Tire & Rubber Company, The: *See*—
Angelis, William J.; Berger, Robert E.; and Conkey, Robert E., 3,811,366.
Brown, Newton D., 3,811,384.
Crossman, Richard L., 3,811,457.
Duncan, Eathel Lee, 3,811,488.
Holding, Thomas; Schisler, Robert C.; and Sawyer, John M., 3,811,570.
Johnson, Ernest D.; Kirschner, Gerald D.; Kondrajian, Edward; and Woodling, Gerald L., 3,811,385.
Larson, William M.; and Bender, Newell R., 3,812,003.
Taylor, Challen E.; and Stanley, John H., 3,811,659.

Gordon, Douglas M.; and Phimister, Thomas H., to Indian Head, Inc. Brake mechanism. 3,811,365, Cl. 92-63.000.

Gordon, Ronnie D., to Continental Oil Company. Process for increasing selectivity to 1-bromoalkane in the addition of hydrogen bromide to olefins. 3,812,212, Cl. 260-663.000.

Gorelick, Donald: *See*—
United States of America, National Aeronautics and Space administration, 3,811,429.

Gorker, George E., to General Electric Company. Looper controlled rolling mill. 3,811,304, Cl. 72-17.000.

Goscenski, Edward J., Jr., to Eaton Corporation. Differential gear mechanism. 3,811,341, Cl. 74-711.000.

Gospodar, Reinhard; Reichel, Kurt; Vogelsang, Gustav; and Thauer, Peter, to Volkswagenwerk Aktiengesellschaft. Induction pipe for internal combustion engines. 3,811,416, Cl. 123-52.00m.

Gotanda, Motohiro. Method of and apparatus for concentric supervision and control of rooms or parts of a house or a building. 3,812,492, Cl. 340-409.000.

Gould, Floyd T., to Honeywell Information Systems, Inc. Electroconductive recording medium and process of making the same. 3,811,935, Cl. 117-215.000.

Grace, W. R., & Co.: *See*—
Duncan, Larry K., 3,812,233.
Previte, Robert W.; and Chin, David, 3,812,076.
Grae, Bernard Aron; and Andrew, Dallas Roy, to RCA Corporation. Tape cartridge player cartridge magazine. 3,812,537, Cl. 360-132.000.
Gralenski, Nicholas M., to Watkins-Johnson Company. Composite X-ray tube/transformer assembly. 3,812,366, Cl. 250-421.000.
Grannen, Edward A., to Occidental Petroleum Corporation. Extraction of boron from aqueous solutions with salicyic acid derivatives and isoamyl alcohol. 3,812,238, Cl. 423-283.000.
Grant, Clarence L.: *See*—
Scammon, Lawrence W., Jr.; Grant, Clarence L.; and Wilks, Phillip H., 3,811,907.
Graves, Howard T.: *See*—
Flogaus, William S.; Graves, Howard T.; Orlando, Harold J.; and Van Der Laske, Dennis P., 3,812,357.
Graves, Howard T., to United States of America, Army. Point source discriminator thermal alarm. 3,812,483, Cl. 340-258.00r.
Graviner (Colnbrook) Limited: *See*—
McCulloch, Alister L., 3,811,511.
Gravlee, Leland C.; and Barringer, Hulbert V., to Becton Dickinson and Company. Dilating apparatus and method. 3,811,449, Cl. 128-343.000.
Gray, Frederick William, to Colgate-Palmolive Company. Dishwashing composition and method of making same. 3,812,045, Cl. 252-99.000.
Gray Tool Company: *See*—
McGee, John K.; and Holbert, Marvin L., Jr., 3,811,709.
Great Lakes Carbon Corporation: *See*—
Diefendorf, Russell J., 3,811,917.
Joo, Louis A.; Martin, Thomas W.; and McKee, John A., 3,811,927.
Whittaker, Mack P.; and Grindstaff, Lloyd I., 3,812,240.
Grebert, Robert: *See*—
Bertrand, Yves; and Grebert, Robert, 3,811,969.
Grebow, Leon David: *See*—
Thun, Leonard; and Grebow, Leon David, 3,811,489.
Greenberg, Sherry F. Foot operated game apparatus. 3,811,676, Cl. 273-110.000.
Gregor, Kurt: *See*—
Diel, Burkhart; Gregor, Kurt; and Huber, Walther, 3,811,187.
Gregoric, Bran F. Self-propelled hydraulically driven vehicle. 3,811,704, Cl. 280-216.000.
Gregory, Thomas K.: *See*—
Douglas, Frank C.; Gregory, Thomas K.; and Stielau, Robert W., 3,811,940.
Grew, Edward Leon; and Robertson, Alastair Agnew, to Smith, Macfarlan, Limited. Reduction of thebaine. 3,812,132, Cl. 260-285.000.
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., to Sperry Rand Corporation. Method of operation of a single bale unloading bale wagon. 3,811,584, Cl. 214-152.000.
Grey, Edward H.; and Shufelt, Robert C., to Sun Oil Company of Pennsylvania. Process for reactivation of soda lime. 3,812,200, Cl. 260-677.00a.
Grgich, Milovan: *See*—
Lawrence, Arthur Charles; and Grgich, Milovan, 3,811,415.
Griffin & Company: *See*—
Wilding, Edwin L., 3,811,585.
Griffin, Ronald G. Adjustable gate hinge. 3,811,149, Cl. 16-130.000.
Griffis, Edgar E.: *See*—
Martin, Roger C., 3,811,148.
Grigsby-Barton, Inc.: *See*—
Pascente, Joseph E., 3,812,382.
Grimaldi, Dominick L.: *See*—
Lupkas, Raymond R.; and Grimaldi, Dominick L., 3,811,407.
Grime, Geoffrey, to Britax (London) Limited. Restraining device for a vehicle passenger. 3,811,701, Cl. 280-150.00b.
Grimm, Eberhard: *See*—
Bystron, Bruno; Grimm, Eberhard; and Oexler, Rudolf, 3,811,256.
Grindstaff, Lloyd I.: *See*—
Whittaker, Mack P.; and Grindstaff, Lloyd I., 3,812,240.
Grip-Pack Inc., mesne: *See*—
Cunningham, Ernest R., 3,811,243.
Grossi, Francesco: *See*—
Bragaglia, Giorgio; and Grossi, Francesco, 3,811,368.
Groswith, Charles T. III: *See*—
Abildgaard, William H.; Groswith, Charles T. III; Deman, Heiko T.; and Buan, Danilo P., 3,811,146.
Grube, William L., to MacLean-Fogg Lock Nut Co. Pierce nut applying tool. 3,811,171, Cl. 29-208.00d.
Gruber, William B.: *See*—
Bell, Lon E.; and Gruber, William B., 3,812,308.
Gryctko, Carl E.; Muchnick, Paul; and Jaconette, Frank C., 1/2% to I-T-E Imperial Corporation and Hubbell, Harvey, Incorporated. Modular ground fault interrupter. 3,812,400, Cl. 317-18.00d.
GTE Automatic Electric Laboratories, Incorporated: *See*—
Borbas, Robert A., 3,812,297.
Crosley, Thomas Whitley, 3,812,337.
Fleischfresser, Gerald H.; and Mila, Truman R., 3,812,299.
Herr, Kurt F., 3,812,302.
Padgett, Richard A., 3,812,293.
GTE Lenkurt Incorporated: *See*—
Stewart, James R., 3,811,225.
GTE Sylvania Incorporated: *See*—
Broadt, David R., 3,812,339.
Guebert, Kenneth W.: *See*—
Bieler, Barrie H.; Morgan, David C.; and Guebert, Kenneth W., 3,811,870.
Gugliotta, George; and Raimo, Anthony J., to Lasre Sciences, Inc. Apparatus for inspecting cigarettes or the like. 3,812,349, Cl. 250-223.00r.
Guillaume, Andre; and Schneider, Charles, to Rhone-Poulenc S.A. Process for gluing paper. 3,811,981, Cl. 156-332.000.
Guillet, Henri; and Luvet, Robert. Method and apparatus for clamping a split collar closing device. 3,811,757, Cl. 351-90.000.
Guillet, James Edwin, to Ecoplastics Limited. Metal container coated with photodegradable composition. 3,811,931, Cl. 117-132.00b.
Guillet, James Edwin. Crosslinking or olefin copolymers containing ketone groups using high energy radiation. 3,812,025, Cl. 204-159.140.
Gulf & Western Precision Engineering Company: *See*—
Soares, Edward W., Jr., 3,811,234.
Gulton Industries, Inc.: *See*—
Ahrano, Cary J., 3,812,309.
Gunter, Donald E., to General Industries, Inc. Bridge circuit changing fault location method and device. 3,812,420, Cl. 324-52.000.
Gurien, Harvey, to Hoffmann-La Roche Inc. Process for producing monoalkanoylfluoresceins. 3,812,153, Cl. 260-335.000.
Guyton, James H., to General Motors Corporation. Circuit board connector with screw fastener. 3,812,381, Cl. 317-101.00p.
Gyori, Steven Andrew: *See*—
Diebler, Herman G.; Gyori, Steven Andrew; and McCandless, William J. C., 3,811,842.
Gysin, Leonhard: *See*—
Zust, Armin; and Schindler, Walter, 3,812,126.
Haake, Robert, to Bell & Howell Company. Cassette tape recorder with indexing head. 3,811,685, Cl. 274-4.00f.
Hack, Heinrich, to Schenck, Carl, Maschinenfabrik GmbH. Balancing apparatus with an optical unbalance indicator. 3,811,327, Cl. 73-465.000.
Hackenbert, Hubert; and Zobel, Siegfried, to Afga-Gevaert Aktiengesellschaft. Photographic apparatus. 3,812,511, Cl. 254-258.000.
Hadeishi, Tetsuo, to United States of America, Atomic Energy Commission. Isotope-shift zeeman effect spectrometer. 3,811,778, Cl. 356-85.000.
Haeberle, Heinz H.: *See*—
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., 3,812,430.
Haede, Werner: *See*—
Stache, Ulrich; Radscheit, Kurt; Firtsch, Werner; and Haede, Werner, 3,812,106.
Haferkamp, Gilbert L.: *See*—
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,504.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,505.
Hager Aktiebolag: *See*—
Hager, Bror Olof, 3,811,200.
Hager, Bror Olof, to Hager Aktiebolag. Drying of wood. 3,811,200, Cl. 34-9.500.
Hagglund, Ruben Jakob Valdemar. Interconnection element system. 3,811,785, Cl. 403-255.000.
Hahn, Gunter; and Hannappel, Gunther, to Messer Griesheim GmbH. Photoelectric scanning device for flame cutting machines. 3,812,412, Cl. 318-577.000.
Hahne, Eckhardt, to Andersen, Hans Christian. Apparatus for the closing of the toe of a circularly knit stocking along a looper-line. 3,811,390, Cl. 112-27.000.
Haitmanek, Louis F., to Thomas & Betts Corporation. Electrical connector. 3,812,448, Cl. 339-97.00c.
Hakansson, Sven Anders Samuel, to Kommanditbolaget United Stirling (Sweden) AB & Co. Stirling cycle engine power control means. 3,811,272, Cl. 60-518.000.
Hakka, Lennart, to Oy Airam Ab. Method for manufacturing anti-skid means intended for vehicle tires. 3,811,877, Cl. 75-208.00r.
Hall, Crayton G., to Ethyl Corporation. Preparation of dialkyl beryllium and recovery by distillation. 3,812,213, Cl. 260-665.00r.
Hall, Phil H., to International Business Machines Corporation. Verifying status while initializing readback cannels in a multichannel magnetic record readback system. 3,812,531, Cl. 360-26.000.
Hall, Samuel, Jr., to Plastic Container Corporation. Safety medicine bottle closure. 3,811,590, Cl. 215-9.000.
Halliburton Company: *See*—
Morrisett, O. L.; and Baker, Eugene E., 3,811,500.
Hamada, Noriaki: *See*—
Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, 3,811,726.
Hamma, Gerhard, to Maschinenfabrik Spaichingen GmbH. Control mechanism for circular knitting machines with rotating needle carrier. 3,811,297, Cl. 66-50.00r.
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, to Kalle Aktiengesellschaft. Fiber fleece containing a polymeric reinforcing material. 3,811,923, Cl. 117-76.00t.
Hammond, Aubrey J.: *See*—
Strickler, Charles J.; and Hammond, Aubrey J., 3,811,967.
Hammond, Philip D.; and Scott, John A., to Olin Corporation. Preparation of aromatic isocyanates in a tubular reactor. 3,812,169, Cl. 260-453.0pc.

Hamrick, Oscar; and Kessinger, Orville E., Jr., to Caterpillar Tractor Co. Band brake and method for making same. 3,811,542, Cl. 188-259.000.

Hand, Robert G., to Lee, Raymond, Organization, Inc., The. Hydrant repair tool. 3,811,344, Cl. 81-90.00e.

Handa, Takashi; and Saito, Minoru, to Adachi Plywood Co., Ltd. Fireproof laminated plywood core. 3,811,992, Cl. 161-267.000.

Hang, Warren Kenneth: *See*—
Carlson, David Emil; Hang, Warren Kenneth; and Stockdale, George Fairbank, 3,811,855.

Hanley, Hope. Embroidery frame. 3,811,209, Cl. 38-102.600.

Hannappel, Gunther: *See*—
Hahn, Gunter; and Hannappel, Gunther, 3,812,412.

Hansen, Gary L.: *See*—
Cook, Melvin Alonzo; Funk, Albert G.; and Hansen, Gary L., 3,811,971.

Hanson, Robert Louis, to Bell Telephone Laboratories, Incorporated. Tone detector. 3,812,432, Cl. 328-138.000.

Hanson Scale Company: *See*—
Artwick, Kert Edward; and O'Neil, Robert Anthony, 3,811,523.

Hanstein, Friedrich: *See*—
Esser, Franz; Hanstein, Friedrich; Hosch, Ludwig; and Mueller, Dieter, 3,812,208.

Hapke, Kenyon A.; and Bagby, John P., to Bell & Howell Company. Film snubber control system. 3,811,612, Cl. 226-195.000.

Happel, John; and Umemura, Sumio, to National Lead Company. Multiple stage carbonylation process. 3,812,175, Cl. 260-486.0ac.

Hardy, Sheila. Paint spray booth. 3,811,371, Cl. 98-11.00j.

Harford, James W.; and Jeffries, Stuart W., to Cybrix Corporation. Magnetic tape cassette changer. 3,811,625, Cl. 242-181.000.

Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, to Kabushiki Kaisha Suwa Seikosha. Silver alloys having high sulphuration resistance. 3,811,876, Cl. 75-173.00r.

Harkrader, Ronald L., to General Motors Corporation. Hydraulic actuator. 3,811,364, Cl. 91-422.000.

Harris, Eugene. Weighted prosthetic breast. 3,811,133, Cl. 3-36.000.

Harris, John L., to Deltrol Corporation. Switching mechanism. 3,812,306, Cl. 200-39.00r.

Harris-Intertype Corporation: *See*—
Marciniak, John J., 3,811,350.

Harrison, Robert E., to Hoerner Waldorf Corporation. Handled bag. 3,811,613, Cl. 229-54.00c.

Harsco Corporation: *See*—
Tarkenton, Ernest L., 3,811,711.

Hartmann, Ludwig A., to ICI America, Inc. Method of producing tranquilization with dioxolanyl alcohols and their halogen derivatives. 3,812,261, Cl. 424-278.000.

Hartmann, Rudolf; and Zimmermann, Horst, to Battelle-Institut e.V. Multi-cylinder stirling gas motor with double-acting pistons. 3,811,283, Cl. 60-484.000.

Hartwig, Walter J., to Allis-Chalmers Corporation. Side stripper for raveling grate conveyor. 3,811,557, Cl. 198-230.000.

Hartz, Gerald, to Reynolds Metals Company. Method of feeding filled containers to a retort or the like. 3,812,270, Cl. 426-231.000.

Harwart, Alois: *See*—
Pfeiffer, Heinrich; Kolb, Karl Heinz; Harwart, Alois; and Schulze, Paul E., 3,812,151.

Hasegawa, Mitsunori: *See*—
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.

Hassler, Heinrich; and Schreiner, Horst, to Siemens Aktiengesellschaft. Method for the manufacture of heterogeneous penetration compound metal. 3,811,939, Cl. 117-227.000.

Haszeldine, Robert Neville: *See*—
Banks, Ronald Eric; and Haszeldine, Robert Neville, 3,812,206.

Hattori, Seiichi: *See*—
Kobayashi, Kengo; Hattori, Seiichi; and Tamura, Masaharu, 3,811,345.

Hauck, Erwin A.; Birchmeier, Hans P.; and Kim, Dongsung R., to Burroughs Corporation. Multiprocessing system having means for partitioning into independent processing subsystems. 3,812,469, Cl. 340-172.500.

Haugh, Connor F.: *See*—
Bossen, Douglas C.; Haugh, Connor F.; and Hsiao, Mu-yue, 3,812,336.

Hautala, Earl: *See*—
Weaver, Merle L.; Hautala, Earl; and Nonaka, Masahide, 3,812,274.

Hawrylo, Frank Zygmunt; and Pankove, Jacques Isaac, to RCA Corporation. Method of epitaxially depositing gallium nitride from the liquid phase. 3,811,963, Cl. 148-172.000.

Hayakawa, Shigeru: *See*—
Hirose, Namio; Matsuo, Yoshihiro; and Hayakawa, Shigeru, 3,811,938.

Hayashi, Hiedo: *See*—
Sato, Hisatake; and Hayashi, Hiedo, 3,812,216.

Hayashi, Izuo, to Bell Telephone Laboratories, Incorporated. Spontaneously emitting hetero-structure junction diodes. 3,812,516, Cl. 357-16.000.

Hayashi, Tatsuki: *See*—
Fudemoto, Isao; Kubota, Shiegeki; and Hayashi, Tatsuki, 3,812,436.

Hayashi, Toshio; Yoshizaki, Akira; and Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Electrical exposure time control device for use in a photographic camera. 3,812,499, Cl. 354-31.000.

Hayashibara Biochemical Laboratories, Incorporated: *See*—
Okada, Shigetaka; and Tsuyama, Naoto, 3,812,011.

Hayford, Donald S.: *See*—
Hayford, William H., Jr.; Hayford, Theodore; and Hayford, Donald S., 3,811,242.

Hayford, Theodore: *See*—
Hayford, William H., Jr.; Hayford, Theodore; and Hayford, Donald S., 3,811,242.

Hayford, William H., Jr.; Hayford, Theodore; and Hayford, Donald S. Method and apparatus for compressing foam blocks for storage and/or shipment. 3,811,242, Cl. 53-24.000.

Haynes, Freddie J. Chock. 3,811,536, Cl. 188-32.000.

Hays, Gary R. Apparatus for exposing and developing photosensitive sheets. 3,811,771, Cl. 355-100.000.

Hearn, Robert Renner, to Creators Limited. Decorative trim strips. 3,811,989, Cl. 161-5.000.

Heckhausen, Hans, to E. & F. Horster, Firma. Device for stripping hoses. 3,811,347, Cl. 83-1.000.

Hedge, John A., to Sun Research and Development Company. Complexation of 2,6-dimethylnaphthalene with p-nitrobenzoic acid. 3,812,198, Cl. 260-674.00n.

Heidrich, Horst. Extruder for processing plastics and rubber. 3,811,658, Cl. 259-191.000.

Heinz, Arnold; and Kuhling, Dieter, to Henkel & Cie GmbH. Method of oxidative treatment of human hair. 3,812,247, Cl. 424-62.000.

Heise, Hartmut; and Mees, Bernhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing benzoxazolones-(2) and benzothiazolones-(2). 3,812,138, Cl. 260-304.000.

Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H., to Seaco Computer-Display Incorporated. Viewer-copier apparatus. 3,811,769, Cl. 355-45.000.

Heller, Jorge; and Baker, Richard W., to Alza Corporation. Bioerodible ocular device. 3,811,444, Cl. 128-260.000.

Henderson, Charles B., to Atlantic Research Corporation. Gelled hydrazine propellant compositions containing hydrazine nitrate and a finely divided metal. 3,811,970, Cl. 149-36.000.

Hendricks, Udo: *See*—
Braden, Rudolf; Hendricks, Udo; Oertel, Gunter; and Schliebs, Reinhard, 3,812,221.

Hendrix, Charles E.: *See*—
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,812,493.

Henkel & Cie GmbH: *See*—
Heinz, Arnold; and Kuhling, Dieter, 3,812,247.
Roderhoff, Bernhard, 3,811,980.

Hennessey, Walter F.: *See*—
Eifler, Raymond J.; and Hennessey, Walter F., 3,812,447.

Henney, John William; and Jones, James William Samuel, to United Kingdom Atomic Energy Authority. Silicon nitride ceramics. 3,811,928, Cl. 117-106.000.

Henri, Dominique, to U.S. Philips Corporation. Light emitting diode device for displaying characters. 3,812,406, Cl. 317-235.00n.

Henry, Vincent, to VJG, Inc. Wipe on color proofing process and product. 3,811,882, Cl. 96-13.000.

Hercules Incorporated: *See*—
Jamison, Joel D., 3,812,253.
Podlas, Thomas J., 3,811,902.
Regelson, William, 3,812,248.

Herr, Kurt F., to GTE Automatic Electric Laboratories, Incorporated. Test desk including a manually controlled connect matrix. 3,812,302, Cl. 179-175.20r.

Hersey Products Inc.: *See*—
Swenson, George H., 3,811,323.

Herstein, Barry S.: *See*—
Salmon, Robert W.; and Herstein, Barry S., 3,811,218.

Herubel, Jean Frederic, to Schlumberger, N., & Cie. Machine for separating a shoulder from a forequarter of meat. 3,811,152, Cl. 17-1.00r.

Herz, Arthur Herman; and Westcott, Edwin Russell, to Eastman Kodak Company. Silver halide emulsion stabilized with isoselenoureas or ketoselenozolidines. 3,811,896, Cl. 96-100.000.

Hess & Cie Metallwarenfabrik: *See*—
Ruegg, Max, 3,811,369.

Hess, Hans-Jurgen E.: *See*—
Cronin, Timothy H.; and Hess, Hans-Jurgen E., 3,812,127.

Hester, Jackson B., Jr., to Upjohn Company, The. 4H-1,2,4-Triazolobenzophenone compounds. 3,812,140, Cl. 260-308.00r.

Hickman Developments, Inc.: *See*—
Moore, Robert G., 3,811,700.

Hiemke, Rudolf: *See*—
Lippke, Paul R., 3,812,348.

Higatsberger, Michael J.; Rumpold, Karl O.; and Viehbock, Franz P. Method and arrangement for determining the C-content in chemical processes. 3,812,364, Cl. 250-395.000.

Higdon, Buster W.; Hobbs, Charles C.; and Onore, Michael J., to Celanese Corporation. Vapor phase decomposition of methyl formate to yield methanol. 3,812,210, Cl. 260-638.00r.

Higgins, Jerome C. Removable cover for paint container rim. 3,811,606, Cl. 272-570.000.

Higgins, Ronald W.; and Massaro, Donald J., to Memorex Corporation. Disk recorder arm assembly. 3,812,535, Cl. 360-103.000.
Hilbert, Francis H., to Motorola, Inc. Dynamic peaking system. 3,812,525, Cl. 358-38.000.
Hill, Charles E.; and Brobeck, William R., to Avco Corporation. Power supply with unidirectional current flow for a pneumatic tire low pressure monitoring and warning system. 3,812,458, Cl. 340-58.000.
Hill, William E.; and Beason, Lew R., to United States of America, Army, mesne. Composite modified double-base propellants with very high burning rates. 3,811,966, Cl. 149-19.200.
Himes, Robert S.: *See—*
Andersen, Poul H.; Povilaitus, Frank R.; and Himes, Robert S., 3,812,312.
Hinchliffe, Basil W., to Koppers Company, Inc. Multi-stage coke cooler. 3,812,018, Cl. 202-230.000.
Hines, Edward, Lumber Co.: *See—*
Miles, Thomas R., 3,811,353.
Hirano, Reiji; Ito, Matsutoshi; and Ishiwta, Juichi, to Canon Kabushiki Kaisha. Display device for use in a desk top calculator. 3,812,489, Cl. 340-324.00r.
Hirohashi, Toshiyuki: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.
Hirose, Namio; Matsuo, Yoshihiro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Production of barium titanate cermics having a positive temperature coefficient of electrical resistance. 3,811,938, Cl. 117-224.000.
Hirschberg, Klaus; and Kramer, Lothar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for stabilizing the drawpoint on a feed godet roll in drawing polyester filaments. 3,812,231, Cl. 264-290.00t.
Hitachi, Ltd.: *See—*
Mitani, Eisuke; Tsuyama, Hitoshi; Itoh, Michiyasu; and Taya, Shunroku, 3,812,356.
Hitchcock, Myron H.: *See—*
Brodes, Donald L.; and Hitchcock, Myron H., 3,812,291.
Hitosugi, Takeo. Die press and adjusting mechanism therefor. 3,811,809, Cl. 425-173.000.
Hizaki, Nobuo: *See—*
Nose, Kiyoo; Kokura, Yoshiji; Hizaki, Nobuo; and Nishikawa, Shigeydshi, 3,812,407.
Hobbs, Charles C.: *See—*
Higdon, Buster W.; Hobbs, Charles C.; and Onore, Michael J., 3,812,210.
Hobbs, Stanley Y., to General Electric Company. Fiber reinforced composite materials. 3,812,077, Cl. 260-40.00r.
Hodgson, Victor Francis: *See—*
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, 3,812,227.
Hodogaya Chemical Co., Ltd.: *See—*
Nagatomi, Makoto; Isogawa, Takayuki; Onodera, Nobuo; and Ishikawa, Nobuo, 3,811,864.
Hoegerle, Karl; Muller, Jean-Claude; Vogel, Christian; and Rumpf, Jurg, to Ciba-Geigy Corporation. 2-(N'-methoxy-N'-methyl-ureido)-benzamide. 3,812,168, Cl. 260-453.00r.
Hoenisch, Walter Harold, to King-Seeley Thermos Co. Refrigeration fan control system. 3,811,292, Cl. 62-183.000.
Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
Kuhnelt, Herbert F., 3,811,458.
Hoerner Waldorf Corporation: *See—*
Harrison, Robert E., 3,811,613.
Hof, Georg: *See—*
Schlomer, Josef; and Hof, Georg, 3,811,976.
Hofer, Kurt; and Voykowitsch, Anton, to Sandoz Ltd. Novel dibenzofuran and dibenzothiophene derivatives. 3,812,152, Cl. 260-329.300.
Hoffman, John E., to Sporlan Valve Company. Method of determining acid and water in oil. 3,811,837, Cl. 23-230.0hc.
Hoffmann-La Roche Inc.: *See—*
Bretschneider, Hermann; Klotzer, Wilhelm; and Franzmair,, 3,812,170.
Chodnekar, Madhukar S.; Thommen, Hans; and Schwieter, Ulrich, 3,812,262.
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,812,129.
Gurien, Harvey, 3,812,153.
Leimgruber, Willy; and Weigele, Manfred, 3,812,181.
Metlesics, Werner; and Sternbach, Leo Henryk, 3,812,103.
Metlesics, Werner; and Sternbach, Leo Henryk, 3,812,143.
Osbond, John Mervyn; and Fothergill, Graham Alwyn, 3,812,133.
Hofmann, Hans-Peter: *See—*
Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, 3,812,258.
Hogg, Walter R.: *See—*
Coulter, Wallace H.; and Hogg, Walter R., 3,812,335.
Holbert, Marvin L., Jr.: *See—*
McGee, John K.; and Holbert, Marvin L., Jr., 3,811,709.
Holbrook, Le Grand K., to Medical Development Corporation. Valve and related structure for vacuum operated liquid-fill bottles. 3,811,485, Cl. 141-59.000.
Holding, Thomas; Schisler, Robert C.; and Sawyer, John M., to Goodyear Tire & Rubber Company, The. Polyurethane screen with backing member. 3,811,570, Cl. 209-399.000.
Holland, Dewey G.: *See—*
Uffner, Melville W.; and Holland, Dewey G., 3,811,933.
Holland, John H., to Arkansas Rock and Gravel Co. Particulate material retaining gate. 3,811,602, Cl. 222-178.000.
Hollstein, Elmer J.; and Butte, Walter A., Jr., to Sun Research and Development Company. Preparation of 2-pyrrolidone. 3,812,148, Cl. 260-326.5fn.
Hollstein, Elmer J., to Sun Research and Development Company. Preparation of 2-pyrrolidinone. 3,812,149, Cl. 260-326.5fn.
Honeycutt, Thomas E.; Otto, William F.; and Cason, Charles M., III, to United States of America, Army. Continuous wave lidar for range and velicity measurement. 3,811,774, Cl. 356-5.000.
Honeywell, Inc.: *See—*
Abel, Irving R., 3,811,749.
Larsen, Larry D.; and Kobek, Edward F., 3,812,362.
Stone, Albert E., 3,812,345.
Honeywell Information Systems, Inc.: *See—*
Gould, Floyd T., 3,811,935.
Honeywell Information Systems Italia: *See—*
Collina, Giancarlo L.; and Tessera, Giancarlo, 3,812,464.
Honold, Ernst; Hubner, Werner; and Sturm, Hans-Dieter, to Klein, Schanzlin & Becker Aktiengesellschaft. Shaft seal. 3,811,687, Cl. 277-28.000.
Hooker Chemical Corporation: *See—*
Goldborn, Peter; and Duffy, James J., 3,812,218.
Hooper, Bernard, to Villiers, Norton, Limited. Vehicle motor mounts. 3,811,528, Cl. 180-33.00a.
Hoover, Charles J. Cable winch having variable ratio interlock. 3,811,656, Cl. 254-184.000.
Hoover, Charles J. Cable winch having a clutch including friction drive and cooling means. 3,811,657, Cl. 254-187.000.
Hopfer, Samuel, to General Microwave Corporation. Conical spiral conductor for applying low frequency signals to a microwave structure. 3,812,438, Cl. 333-97.00r.
Hopper, Frederick W., to Martin Marietta Corporation. Precession control device for a class of spin stabilized space vehicles. 3,811,641, Cl. 244-1.0sa.
Horgan, William J., Jr., to Blumcraft of Pittsburgh. Method of assembling posts and rails. 3,811,176, Cl. 29-469.000.
Horl, Gunter. Apparatus for supporting relatively movable complemental mold parts. 3,811,811, Cl. 425-192.000.
Horny, Armand J. Reinforced aluminum shingle. 3,811,240, Cl. 52-560.000.
Horton, Claude W.: *See—*
Lane, Richard N.; and Horton, Claude W., 3,812,456.
Hosch, Ludwig: *See—*
Esser, Franz; Hanstein, Friedrich; Hosch, Ludwig; and Mueller, Dieter, 3,812,208.
Hosoda, Kirokuro; and Shiina, Naonori, to Furukawa Electric Company Limited, The. Method of manufacturing foamed cross-linked polyolefin slabs involving multiple expansion techniques and direct gas pressure. 3,812,225, Cl. 264-54.000.
Hosoe, Toshiaki; Okami, Yuji; Michishita, Katsumi; and Fukuda, Shuzo, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for identifying the periodicity of surface defects of strip materials. 3,812,373, Cl. 250-562.000.
Hosono, Hiroo: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,811,640.
Hostetler, Eldon: *See—*
Murto, Robert A.; and Hostetler, Eldon, 3,811,412.
Houdaille Industries, Inc.: *See—*
Dahlman, George L.; and Kern, Leon O., 3,811,694.
Howard, Lyman S.: *See—*
Killen, Richard J.; Brandom, Boyce; and Howard, Lyman S., 3,811,244.
Howe, David G.; and Meussner, Russell A., to United States of America, Navy. Method of enhancing V_3Ga thin film growth. 3,811,185, Cl. 29-599.000.
Howell, James E.; Hudson, Wayne T.; and Krzyzewski, Henry A., to United States of America, Army. Tri-frequency instrumentation antenna. 3,812,494, Cl. 343-852.000.
Hoya Lens Co., Ltd.: *See—*
Onoki, Fumio; and Kamiya, Hajime, 3,811,753.
Hsiao, Mu-yue: *See—*
Bossen, Douglas C.; Haugh, Connor F.; and Hsiao, Mu-yue, 3,812,336.
Hubbell, Harvey, Incorporated: *See—*
Gryctko, Carl E.; Muchnick, Paul; and Jaconette, Frank C., 3,812,400.
Hubele, Adolf, to Ciba-Geigy AG. Antimicrobial treatment of fibre products with phenylthioureas. 3,811,932, Cl. 117-138.500.
Huber, Hans-Peter: *See—*
Zahn, Wolfgang; and Huber, Hans-Peter, 3,811,768.
Huber, Walther: *See—*
Diel, Burkhart; Gregor, Kurt; and Huber, Walther, 3,811,187.
Hubner, Werner: *See—*
Honold, Ernst; Hubner, Werner; and Sturm, Hans-Dieter, 3,811,687.
Huddle, Carl F., to Tension Structures Co. Structural membrane attachment to an arch. 3,811,454, Cl. 135-1.00r.

Hudson, Wayne T.: *See—*
Howell, James E.; Hudson, Wayne T.; and Krzyzewski, Henry A., 3,812,494.

Huebler, Jack: *See—*
Massey, Lester G.; Tarman, Paul B.; and Huebler, Jack, 3,812,048.

Hughes Aircraft Company: *See—*
Braunstein, Morris; and Bleha, William P., Jr., 3,811,180.
Egan, Georgette S., 3,811,554.
Myer, Gary D., 3,811,751.

Hughes Co., Inc.: *See—*
Ajero, Fortunato S., 3,811,550.

Humphreys Corporation: *See—*
Scammon, Lawrence W., Jr.; Grant, Clarence L.; and Wilks, Phillip H., 3,811,907.

Hunsberger, Arnold, to U.S. Elevator Manufacturing Corporation. Adjustable worn drive unit. 3,811,335, Cl. 74-409.000.

Hunt, John Oliver Alfred: *See—*
Wren, Frederick James; Instone, Eric Frank; Hunt, John Oliver Alfred; and Wright, Alan John, 3,811,744.

Huppe, Robert L.: *See—*
Landrum, Leslie H.; and Huppe, Robert L., 3,812,243.

Huppke, Glen P., to Environeering, Inc. Foam type gas scrubber. 3,811,247, Cl. 55-178.000.

Hurletron Incorporated: *See—*
Coberley, Daniel A., 3,812,351.

Husted, John M.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., 3,812,430.

Hutchison, Stanley O., to Chevron Research Company. High pressure jet well cleaning. 3,811,499, Cl. 166-67.000.

Hydraulic Systems, Inc.: *See—*
Bickford, John C., 3,811,798.

I-T-E Imperial Corporation: *See—*
Gryctko, Carl E.; Muchnick, Paul; and Jaconette, Frank C., 3,812,400.

ICI America Inc.: *See—*
D'Alelio, Gaetano F.; and Kuehn, Erich, 3,812,047.
Hartmann, Ludwig A., 3,812,261.

Iijima, Tetsuya: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,811,343.

Ikawa, Kenji: *See—*
Tanaka, Hozumi; Ikawa, Kenji; and Takami, Fumitaka, 3,812,124.

Ikeda Bussan Company, Limited: *See—*
Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, 3,811,726.

Ikegami, Yoshizo, to Konan Camera Research Institute. Magnetic recording appliance with control for transferring desired information from an endless tape. 3,812,530, Cl. 360-5.000.

Illian, Ludwig Wilhelm. Method and apparatus to test electronic circuit assembly samples. 3,812,426, Cl. 324-73.00r.

Illinois Tool Works, Inc.: *See—*
Poupitch, Ougljesa Jules, 3,811,561.

Imashiro, Yoshio: *See—*
Masuda, Katsutada; and Imashiro, Yoshio, 3,812,128.

Imperial Chemical Industries, Limited: *See—*
Burdett, Marion; and Walbridge, Derek John, 3,812,075.
Garner, Paul Johnson; and Collins, Thomas Robert Stephen, 3,811,175.
Sherrard-Smith, Kenneth Irwin, 3,811,165.

Inaba, Shigeho: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,102.
Kimura, Michio; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,112.
Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,135.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,118.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.

Inaba, Shin-Ichi; Okimoto, Ken-Ichi; Tamura, Setsuo; and Uenaka, Toshiyuki, to Kobe Steel, Ltd. Method for charging materials into blast furnace. 3,811,868, Cl. 75-42.000.

Inaga, Hisashi: *See—*
Kobayashi, Torao; and Inaga, Hisashi, 3,811,399.

Inamorato, Jack Thomas, to Colgate-Palmolive Company. Non-gelling heavy duty liquid laundry detergent. 3,812,041, Cl. 252-89.000.

Indexette Tapers, Inc.: *See—*
Stone, Wayne B., Jr.; and Beaumont, Alan, 3,812,538.

Indian Head, Inc.: *See—*
Gordon, Douglas M.; and Phimister, Thomas H., 3,811,365.

Indiana National Bank, The, mesne: *See—*
Everitt, Scott F., 3,811,532.

Industrial Science & Technology, Agency of: *See—*
Takeyama, Hidehiko; and Takada, Koji, 3,812,376.

Ingersoll-Rand Company: *See—*
Buse, Frederick W.; and Sensinger, Warner E., Jr., 3,811,801.

Ingram, James Charles: *See—*
Smith, Albert Ernest; and Ingram, James Charles, 3,812,224.

Inmot Corporation: *See—*
Burrell, Harry; and Miller, Robert C., Jr., 3,811,915.

Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo, to Fuji Photo Film Co., Ltd. and said Nakayama, Takao, Oka, Yutaka and Nakai, Yasuo assors. to Dai Nippon Printing Co., Ltd. Process for forming images. 3,811,884, Cl. 96-27.00r.

Inoue, Mutsuhiro; and Tanaka, Kano, to Canon Kabushiki Kaisha. Mark reader. 3,812,327, Cl. 235-61.11e.

Inoue, Noriyuki, to Xerox Corporation. Electrostatographic apparatus with air baffle. 3,811,670, Cl. 271-80.000.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Capdevielle, Pierre; and Kermarrec, Francois, 3,811,460.

Instone, Eric Frank: *See—*
Wren, Frederick James; Instone, Eric Frank; Hunt, John Oliver Alfred; and Wright, Alan John, 3,811,744.

Intech Corporation, mesne: *See—*
Glaze, John W., Jr., 3,811,607.

Integrated Photomatrix Limited: *See—*
Fry, Peter William, 3,812,431.
Porter, David Charles, 3,812,386.

International Business Machines Corporation: *See—*
Abraham, Dennis G.; and McSparran, Ray A., 3,812,414.
Bossen, Douglas C.; Haugh, Connor F.; and Hsiao, Mu-yue, 3,812,336.
Brearley, Donald William, 3,811,547.
Charlson, Paul Marlin; Den Tex, Karel; and Fingerson, Conrad Ferdinand, 3,811,377.
Christiansen, Carl L.; Kanter, Lawrence E.; and Monroe, George R., 3,812,475.
Clecak, Nicholas J.; Cox, Robert J.; and Mareau, Wayne M., 3,812,162.
Hall, Phil H., 3,812,531.
Keidl, Steven Dennis, 3,812,413.
Larnerd, John D.; McGarigle, Donald M.; and Samuelson, Carl E., 3,811,186.
Ruszczyk, James F.; and Secrist, Duane R., 3,811,856.
Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., 3,811,182.
Southworth, Richard Alvin, 3,812,388.
Tucker, Stuart G., 3,812,473.
Wieder, Harold, 3,812,477.

International Computers Limited: *See—*
Burton, Christopher Philip, 3,812,487.

International Nickel Company, Inc., The: *See—*
Parry, Philip James; and Twigg, Peter Lindsay, 3,811,960.
Snape, Edwin, 3,811,872.

International Nickel Company, The: *See—*
De Barbadillo, John Joseph, II, 3,811,873.

International Playtex Corporation: *See—*
Dostal, Zdenek Denny, 3,811,445.

International Standard Electric Corporation: *See—*
Fries, Hjalmar Elias, 3,811,469.
Johansson, Johan A. E., 3,812,282.

International Synthetic Rubber Company Limited, The: *See—*
Bennett, Donald Alfred, 3,812,088.

International Telephone and Telegraph Corporation: *See—*
Austin, Robert R.; and Creighton, David M., 3,811,253.
Faffaelli, Joseph Gino; and Palmer, Reed Albert, 3,812,324.
Levin, Herbert L., 3,811,747.
Stewart, Edward F., 3,812,303.

Inventa AG fur Forschung und Patentverwertung: *See—*
Gabler, Rudolf; and Studinka, Josef, 3,812,192.

Irani, Nayyir F.: *See—*
Babbitt, John M.; Spayd, Richard W.; and Irani, Nayyir F., 3,811,897.

Ireco Chemicals: *See—*
Cook, Melvin Alonzo; Funk, Albert G.; and Hansen, Gary L., 3,811,971.

Ireks Arkady G.m.b.H., Firma: *See—*
Menzel, Waldemar, 3,811,494.

Ishidera, Takashi: *See—*
Sato, Kiyoomi; and Ishidera, Takashi, 3,811,545.

Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, to Konishiroku Photo Industry Co., Ltd. Photographic material comprising bis-acylhydrazinium compounds. 3,811,887, Cl. 96-50.00r.

Ishikawa, Nobuo: *See—*
Nagatomi, Makoto; Isogawa, Takayuki; Onodera, Nobuo; and Ishikawa, Nobuo, 3,811,864.

Ishiwta, Juichi: *See—*
Hirano, Reiji; Ito, Matsutoshi; and Ishiwta, Juichi, 3,812,489.

Ishizumi, Kikuo: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.

Ishizumi, Kikuo; Mori, Kazuo; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Process for producing benzodiazepine derivatives. 3,812,102, Cl. 260-239.30d.

Isogawa, Takayuki: *See—*
Nagatomi, Makoto; Isogawa, Takayuki; Onodera, Nobuo; and Ishikawa, Nobuo, 3,811,864.

Itek Corporation: *See—*
Chin, Dick Yen, 3,812,371.

MacGovern, Alan J., 3,812,352.
Wirtz, John S.; and Nellis, David C., 3,812,372.
Ito, Ikoh; Sekihara, Takeshi; Emura, Tomoyuki; and Ueda, Takeshi, to Sumitomo Chemical Company, Limited. Process for producing vinyl chloride resin. 3,812,073, Cl. 260-30.40r.
Ito, Kunihiro, to Kawasahi Jukogyo Kabushiki Kaisha. Flying shear for cutting stock into desired sectional lengths. 3,811,354, Cl. 83-320.000.
Ito, Matsutoshi: *See—*
Hirano, Reiji; Ito, Matsutoshi; and Ishiwta, Juichi, 3,812,489.
Ito, Yuko, to Kabushiki Kaisha Nihon Hatch Cover Kenkyusho. Hatch covers. 3,811,223, Cl. 49-127.000.
Itoh, Michiyasu: *See—*
Mitani, Eisuke; Tsuyama, Hitoshi; Itoh, Michiyasu; and Taya, Shunroku, 3,812,356.
Itoyama, Kenji: *See—*
Kadowaki, Takashi; Itoyama, Kenji; and Matsuzawa, Shoya, 3,812,203.
ITT Industries, Inc.: *See—*
Knapp, Wilhelm; and Ohmayer, Siegfried, 3,811,540.
Ivas, Thomas W.; and Slavik, William H., to Motorola, Inc. Preset control system for a color television receiver. 3,812,524, Cl. 358-28.000.
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, to Sankyo Company Limited. 4Beta-alkoxy-4alpha-(3'-hydroxyphenyl)-3alpha,5alpha-propanopiperidine derivatives. 3,812,134, Cl. 260-293.540.
Izumi, Takahiro: *See—*
Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,135.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.
Izura, Yoshiteru; and Okano, Keisuke, to Matsushita Electric Industrial Co., Ltd. Color still picture projecting apparatus. 3,812,522, Cl. 358-1.000.
Jackson, Gordon Frederick William, to C.A.V. Limited. Liquid fuel pumping apparatus. 3,811,799, Cl. 417-221.000.
Jacob, Bernarr A.: *See—*
Galasso, Francis S.; and Jacob, Bernarr A., 3,811,920.
Jacobs, Bernardus Antonius; and Kramer, Pieter, to U.S. Philips Corporation. Apparatus for aligning a mask with respect to a semiconductor substrate. 3,811,779, Cl. 356-172.000.
Jacobs, Joh., & Company: *See—*
Schmidt, Ernst Georg Ferdinand Heinrich, 3,812,273.
Jacobs Manufacturing Company, Limited, The: *See—*
Derbyshire, George C., 3,811,693.
Jacobsen, Karl Olav. Apparatus for manufacturing large, bonded panel elements such as wall elements for housing construction. 3,811,982, Cl. 156-382.000.
Jacobson, Arthur F.: *See—*
Jacobson, Harold D.; and Jacobson, Arthur F., 3,811,434.
Jacobson, Harold D.; and Jacobson, Arthur F., to Jacobson, S. I., Mfg. Co. Inflatable splint. 3,811,434, Cl. 128-89.00r.
Jacobson, S. I., Mfg. Co.: *See—*
Jacobson, Harold D.; and Jacobson, Arthur F., 3,811,434.
Jacoby, Jerold L.: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Aprahamian, Robert; and Jacoby, Jerold L., 3,812,454.
Jaconette, Frank C.: *See—*
Gryctko, Carl E.; Muchnick, Paul; and Jaconette, Frank C., 3,812,400.
Jaeggi, Hans-Peter: *See—*
Buchter, Jean-Edouard; and Jaeggi, Hans-Peter, 3,811,382.
Jahngen, Edwin G., Jr.: *See—*
Bader, Henry; Feingold, Michael; and Jahngen, Edwin G., Jr., 3,812,191.
Jaklevic, Robert C.; Lambe, John J.; and Mikkor, Mati, to Ford Motor Company. Light reflex-refracting coating system for coloring metals. 3,811,752, Cl. 350-164.000.
James, Fred, to Library Binding Service, Inc. End paper assembly. 3,811,998, Cl. 161-100.000.
James, Robert L.: *See—*
Neikam, William C.; and James, Robert L., 3,812,171.
Jamison, Joel D., to Hercules Incorporated. O,O-Di(C_1 and C_2 alkyl) phosphorodithioate and phosphorothioate esters as insecticides and acaricides. 3,812,253, Cl. 424-200.000.
Jannssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendirk; Postma, Lambertus; and Vondeling, Jacob Klass, to U.S. Philips Corporation. Photomask. 3,811,893, Cl. 96-79.000.
Janome Sewing Machine Co., Ltd.: *See—*
Kasuga, Noboru, 3,811,392.
Jarratt, Robert L., Trustee; in bankruptcy for Semiconductor Electronic Memories, Inc.: *See—*
Wesson, Richard A.; and Platter, Sandford, 3,811,829.
Jarrett, Noel: *See—*
Russell, Allen S.; Jarrett, Noel; Bruno, Marshall J.; and Remper, John A., 3,811,916.
Jarvis, Howell R.; and Cole, Ernest A., Jr., to Petrolite Corporation. Separator for oil-continuous dispersions. 3,812,027, Cl. 204-302.000.
Jeambey, Calhoun G. Fifth wheel trailer and prime mover therefor. 3,811,707, Cl. 280-423.00r.
Jeffries, Stuart W.: *See—*
Harford, James W.; and Jeffries, Stuart W., 3,811,625.
Jennings, Joseph W. Method of shaving. 3,811,349, Cl. 83-14.000.
Jeno's Inc.: *See—*
Paulucci, Jeno F., 3,811,594.
Johansson, Johan A. E., to International Standard Electric Corporation. Tearable insulation sheath for cables. 3,812,282, Cl. 174-68.00c.
Johns-Manville Corporation: *See—*
Earle, Paul Lewis; Musz, Andrew; and Vandervelden, Jan Josef Maria, 3,811,814.
Pintard, Frederick Bruce, 3,811,714.
Johnson, Charles. Paint applicator. 3,811,783, Cl. 401-9.000.
Johnson, Daniel D., to Du Pont de Nemours, E. I., and Company. Antistatic additive compositions. 3,811,848, Cl. 44-62.000.
Johnson, David L.: *See—*
Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H., 3,811,769.
Johnson, Ernest D.; Kirschner, Gerald D.; Kondrajian, Edward; and Woodling, Gerald L., to Goodyear Tire & Rubber Company, The. Transportation system. 3,811,385, Cl. 104-167.000.
Johnson, Gordon, Company: *See—*
Scheier, Donald J.; and Bonuchi, James A., 3,811,555.
Johnson, James D.; and Maytum, Alan T., to Rockwell International Corporation. Wheel speed sensor. 3,812,391, Cl. 310-168.000.
Johnson, Morris A.; and Yang, Kang, to Continental Oil Company. Process for the reaction of bromoalkanes with inorganic chlorides. 3,812,211, Cl. 260-658.00r.
Johnson, Robert L.: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Aprahamian, Robert; and Jacoby, Jerold L., 3,812,454.
Johnson, Robert W., Jr.: *See—*
Laran, Roy J.; Kobetz, Paul; and Johnson, Robert W., Jr., 3,812,195.
Johnson, Robert William; and Shanker, Irvin Paul, to ESB Incorporated. Dual film picture viewer. 3,811,759, Cl. 352-79.000.
Johnson, Roy D.; and Rubis, Casimer Joseph, to United States of America, Navy. Dynamic braking of a gas turbine powered ship propulsion system utilizing a D.C. electric drive. 3,812,411, Cl. 318-376.000.
Johnson Service Company: *See—*
Mann, Ronald P., 3,812,465.
Johnson, Willard L.: *See—*
Evans, Dewey M.; and Johnson, Willard L., 3,811,252.
Johnston, Otis A., to Western Geophysical Company of America. Soil-compaction method and apparatus for a seismic energy source transducer. 3,811,530, Cl. 181-.5vm.
Jones & Laughlin Steel Corporation: *See—*
Gerding, Charles Christian, 3,811,491.
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, to Fiber Industries, Inc. Yarn creeling and transferring process. 3,811,264, Cl. 57-159.000.
Jones, George T. Foundation structure for mobile home. 3,811,722, Cl. 296-23.003.
Jones, Howard: *See—*
Shen, Tsung-Ying; and Jones, Howard, 3,812,109.
Shen, Tsung-Ying; and Jones, Howard, 3,812,180.
Jones, James William Samuel: *See—*
Henney, John William; and Jones, James William Samuel, 3,811,928.
Jones, Leon. Cow milking machine system, and vacuum regulator incorporated therein. 3,811,467, Cl. 137-494.000.
Jones, R. A., & Company, Incorporated: *See—*
Weichhand, Robert J.; Schuler, Ralph J.; and Dieter, Julian A., 3,811,330.
Jones, Robert J., to TRW Inc. Compliant polyimides. 3,812,082, Cl. 260-49.000.
Jones, Robert J.; and Burns, Eugene A., to TRW Inc. Thermosetting perhalogenated polymers. 3,812,083, Cl. 260-63.0uy.
Jonker, Hendirk: *See—*
Jannssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendirk; Postma, Lambertus; and Vondeling, Jacob Klass, 3,811,893.
Joo, Louis A.; Martin, Thomas W.; and McKee, John A., to Great Lakes Carbon Corporation. Process for vapor deposition on glassy-carbon substrate. 3,811,927, Cl. 117-106.00r.
Joonase, Paul. Method for preparing tubular thermoplastic filaments. 3,811,984, Cl. 156-251.000.
Jordan, Alexander: *See—*
Linn, Thomas Daniel; Klauser, John George; Jordan, Alexander; and Tikijian, George Haig, 3,812,474.
Jordan, Anthony, to Chicago Magnet Wire Corp. Package for dispensing wire with preset tension. 3,811,639, Cl. 242-129.800.
Jorgensen, William A. W.: *See—*
Mc Burnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., 3,811,719.
Jourdin, Jacques: *See—*
Derre, Andre; and Jourdin, Jacques, 3,812,338.
Judd, Robert R.: *See—*
Chao, Hung-Chi; Judd, Robert R.; Rueckl, Roger L.; and Russell, Charles K., 3,811,878.
Jung, Margarete, to Varta A.G. Hydrazine fuel cell and method of operating same. 3,811,949, Cl. 136-86.00d.
Junkert, Kenneth G.: *See—*
Kimura, Noboru; and Junkert, Kenneth G., 3,812,533.

Jurcit, John Calvin; and Castillo, Adolfo, to Automated Building Components, Inc. Apparatus for unloading and stacking wooden structural frames. 3,811,578, Cl. 214-7.000.

Justrite Manufacturing Company, The: *See—*
Flider, Frank S., 3,811,605.

Kabushiki Kaisha Dowa: *See—*
Miyahara, Kingo, 3,811,818.

Kabushiki Kaisha Kito: *See—*
Kanetake, Norio, 3,811,929.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kobayashi, Hideyoshi, 3,811,793.

Kabushiki Kaisha Koparu: *See—*
Shimizu, Munetaka; and Takayama, Masao, 3,812,512.

Kabushiki Kaisha Nihon Hatch Cover Kenkyusho: *See—*
Ito, Yuko, 3,811,223.

Kabushiki Kaisha Suwa Seikosha: *See—*
Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,811,876.

Kabushiki Kaisha Yoshikawa Seisakusho: *See—*
Yoshikawa, Junihiko, 3,811,541.

Kabushikikaisha Copal: *See—*
Sato, Takayoshi, 3,812,502.

Kadowaki, Takashi; Itoyama, Kenji; and Matsuzawa, Shoya, to Denki Kagaku Kogyo Kabushiki Kaisha. Chloroprene rubber composition and method of producing the same. 3,812,203, Cl. 260-845.000.

Kaelin, Joseph Richard. Aeration device for the surface aeration of liquids. 3,811,662, Cl. 261-91.000.

Kagami, Teruo; Fujiwhara, Mitsuto; and Endo, Takaya, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material containing cyan-colored couplers. 3,811,892, Cl. 96-74.000.

Kaiser Aluminum & Chemical Corporation: *See—*
Goodnow, Warren H.; Cauvin, Sidney L., Jr.; and Simard, Joseph G. C., 3,812,024.

Kaiser, Gerhard; and Faiss, Gerhard, to Wagner, Gustav, Maschinenfabrik. Conveyor apparatus, especially for sectional steel. 3,811,556, Cl. 198-204.000.

Kaiser, Robert G., to Clark & Vicario Corporation. Conduit system for conveying fibrous stock from deaerator chamber to headbox in papermaking machine. 3,812,007, Cl. 162-343.600.

Kalaf, Abe M.; and Chiaro, Dominic A., to Bus-Rx, Inc. Method of and apparatus for collecting cuttings from a drilled hole. 3,811,518, Cl. 175-60.000.

Kali-Chemie Aktiengesellschaft: *See—*
Thies, Peter Willibrord, 3,812,154.

Kalle Aktiengesellschaft: *See—*
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, 3,811,923.

Kalninch, Arvid Yanovich: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

Kamata, Tokumaro: *See—*
Katagiri, Keizo; Sakaguchi, Namoru; and Kamata, Tokumaro, 3,812,005.

Kamiya, Hajime: *See—*
Onoki, Fumio; and Kamiya, Hajime, 3,811,753.

Kamuro, Setsufumi: *See—*
Miyata, Etsutaro; Kamuro, Setsufumi; and Sano, Kenji, 3,812,285.

Kamyr Aktiebolag: *See—*
Ostberg, Bengt Sven Erik, 3,811,994.

Kanayama, Mitsutoshi; and Konishi, Motofumi, to Canon Kabushiki Kaisha. Film reproduction device. 3,811,772, Cl. 355-111.000.

Kaneko, Norio: *See—*
Uchiyama, Masao; and Kaneko, Norio, 3,812,196.

Kanetake, Norio, to Kabushiki Kaisha Kito. Metallic cementation. 3,811,929, Cl. 117-107.20r.

Kanij, Johannes Bastiaan Willem: *See—*
Noothout, Arend Jaman; Kanij, Johannes Bastiaan Willem; and Votocek, Otakar, 3,812,049.

Kanter, Lawrence E.: *See—*
Christiansen, Carl L.; Kanter, Lawrence E.; and Monroe, George R., 3,812,475.

Kantor, Sidney: *See—*
Martin, John Henry Edward James; and Kantor, Sidney, 3,812,249.

Kao Soap Co., Ltd.: *See—*
Doi, Tadashi, 3,811,911.

Kaplan, Sam H., to Zenith Radio Corporation. Cathode ray tube image screen with single, optically continuous filter. 3,812,394, Cl. 313-467.000.

Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. Hydrazides. 3,812,187, Cl. 260-557.00b.

Karden, Karl Gosta: *See—*
Blomberg, Jarl Joel; Elmessaar, Heino; and Karden, Karl Gosta, 3,811,514.

Karhade, Manohar G.: *See—*
Bowman, Lloyd D.; Karhade, Manohar G.; and Schneiderman, Daniel I., 3,812,330.

Karitani, Tadakazu: *See—*
Tomita, Akio; Karitani, Tadakazu; and Ohtsuki, Takashi, 3,811,567.

Kariyone, Kazuo: *See—*
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.

Kasai, Kazutomo: *See—*
Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,811,876.

Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna. Polymer derivative of 1-methyl-5[5-oxo-4-ethyltetrahydrofuryl-(3)-methyl]imidazole with cellulose glycolic acid. 3,812,099, Cl. 260-213.000.

Kassel, Aaron, to Technicon Instruments Corporation. Gating flow cell structure for continuous-flow analysis systems. 3,811,841, Cl. 23-253.00r.

Kasuga, Noboru, to Janome Sewing Machine Co., Ltd. Double chain stitching method and device for sewing machine. 3,811,392, Cl. 112-168.000.

Kasugai, Tsuneo; and Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Method for preparing a support for a photographic light-sensitive material. 3,811,913, Cl. 117-34.000.

Kasuya, Kazuhiko: *See—*
Ohta, Wasaburo; Kasuya, Kazuhiko; Fujimoto, Sakae; and Yamauchi, Masayuki, 3,811,828.

Katagiri, Keizo; Sakaguchi, Namoru; and Kamata, Tokumaro, to Nippon Kakoh Seishi K.K. Self-sticking material and a process for producing the same. 3,812,005, Cl. 161-247.000.

Kato, Taketoshi: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,812,519.

Katsimbas, Themistoklis; Dalibor, Horst; and Quednau, Peter, to Reichhold-Albert-Chemie Aktiengesellschaft. Stoving lacquers. 3,812,067, Cl. 260-28.50r.

Kaufman, Bernard; and Kitovich, William. Gasoline engine and electric motor system for boats or the like. 3,812,379, Cl. 290-50.000.

Kaunzinger, Helmuth M.; and Buser, Rudolf G., to United States of America, Army. Electronic field mill. 3,812,419, Cl. 324-32.000.

Kawakami, Shinya. Massaging device. 3,811,430, Cl. 128-33.000.

Kawasahi Jukogyo Kabushiki Kaisha: *See—*
Ito, Kunihiro, 3,811,354.

Kay, John A., Jr.: *See—*
Thompson, Howard G.; and Kay, John A., Jr., 3,811,516.

Keeley, Robert A.; and McFarland, A. Rae. Temperature responsive gauge. 3,811,402, Cl. 116-114.500.

Keenan, Daniel J.; and Welzein, Norman F., said Welzein assor. to Adams, Samuel C. Fuel spray back inhibitor for two cycle engines. 3,811,417, Cl. 123-73.00a.

Keidl, Steven Dennis, to International Business Machines Corporation. Drive circuit for inductive load. 3,812,413, Cl. 318-696.000.

Kelley, Fred W., Jr.: *See—*
Barkan, Philip; Kelley, Fred W., Jr.; and Shook, Theodore A., 3,812,404.

Kelley, Louis E., to Rohm & Haas Company. Composition comprised of a water-insoluble N-methylol-amide-acrylic acid ester copolymer with a polyalkylene glycol. 3,812,070, Cl. 260-29.4ua.

Kelly, Michael J. Elastic scale instrument. 3,811,191, Cl. 33-137.001.

Keltz, Laurence. Voltage regulating system. 3,812,417, Cl. 322-55.000.

Kemnitz, Robert H., to Allis-Chalmers Corporation. Gyratory crusher with a pair of interchangeable axial thrust bearings. 3,811,626, Cl. 241-214.000.

Kendall Company, The: *See—*
Dye, John F., 3,811,592.

Kennecott Copper Corporation: *See—*
Santangelo, Joseph G.; and Dorchak, Thomas P., 3,812,017.

Kennedy, William A., Jr., to Corken Pump Company. Automatic pressure control system for pumps. 3,811,792, Cl. 417-28.000.

Kermarrec, Francois: *See—*
Capdevielle, Pierre; and Kermarrec, Francois, 3,811,460.

Kern, Leon O.: *See—*
Dahlman, George L.; and Kern, Leon O., 3,811,694.

Kerns, Gary Paul: *See—*
Woods, James F.; and Kerns, Gary Paul, 3,811,571.

Kerr, Edwin L., to Perkin-Elmer Corporation, The. Method and apparatus for measuring thin film absorption at laser wavelengths. 3,811,782, Cl. 356-201.000.

Kessinger, Orville E., Jr.: *See—*
Hamrick, Oscar; and Kessinger, Orville E., Jr., 3,811,542.

Key Chemicals, Inc.: *See—*
Carstens, Ronald A.; and Butcher, William J., 3,812,055.

Kiessling, Rudolf H., to Square D Company. Electric terminal connector. 3,812,453, Cl. 339-266.00r.

Killen, Dennis: *See—*
Blackwell, James Brian; Killen, Dennis; and Hodgson, Victor Francis, 3,812,227.

Killen, Richard J.; Brandom, Boyce; and Howard, Lyman S., to Dart Industries, Inc. Hose winding and packaging machine. 3,811,244, Cl. 53-116.000.

Killian, Charles R., to Foster Grant Co., Inc. Method and apparatus for determining progress of a chemical reaction occurring within beads in a liquid suspension. 3,811,318, Cl. 73-61.00r.

Kilpatrick, Wallace D.: *See—*
Wernlund, Roger F.; Carroll, David I.; Kilpatrick, Wallace D.; and Cohen, Martin J., 3,812,355.

Kim, Chung: *See—*
United States of America, National Aeronautics and Space administration, 3,811,429.

Kim, Dongsung R.: *See—*
Hauck, Erwin A.; Birchmeier, Hans P.; and Kim, Dongsung R., 3,812,469.

Kimura, Michio; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Indolylacetic acid derivatives. 3,812,112, Cl. 260-240.00j.

Kimura, Noboru; and Junkert, Kenneth G., to Vermont Research Corporation, mesne. Information storage unit transducer positioning system. 3,812,533, Cl. 360-77.000.

Kimura, Tadasu; Kobayashi, Juichi; and Nakamoto, Hideo, to Mitsubishi Rayon Company Limited. Polyester prepolymer useful for coating and a method of preparing the same. 3,812,063, Cl. 260-9.000.

King, Robert W., to Copeland Refrigeration Corporation. Lubricating system for rotary machine. 3,811,806, Cl. 418-100.000.

King-Seeley Thermos Co.: *See—*
Hoenisch, Walter Harold, 3,811,292.

Kioritz Corporation: *See—*
Kobayashi, Torao; and Inaga, Hisashi, 3,811,399.

Kipp, Kevin K.: *See—*
Oswitch, Stanley; and Kipp, Kevin K., 3,812,074.

Kirsch, Warren B., to Ethyl Corporation. Beryllium hydride containing stabilizing agents. 3,812,237, Cl. 423-266.000.

Kirschner, Gerald D.: *See—*
Johnson, Ernest D.; Kirschner, Gerald D.; Kondrajian, Edward; and Woodling, Gerald L., 3,811,385.

Kish, Donald Eugene; and Smith, James Lanson, to Bell Telephone Laboratories, Incorporated. Code translator employing sequential memories. 3,812,480, Cl. 340-174.0tf.

Kitamura, Hajima: *See—*
Koyanagi, Shiniche; Kitamura, Hajima; and Maruyama, Akiyoshi, 3,812,215.

Kitazume, Shoji: *See—*
Tashiro, Kijuro; Yokoyama, Masuzo; and Kitazume, Shoji, 3,812,089.

Kitovich, William: *See—*
Kaufman, Bernard; and Kitovich, William, 3,812,379.

Klauser, John George: *See—*
Linn, Thomas Daniel; Klauser, John George; Jordan, Alexander; and Tikijian, George Haig, 3,812,474.

Klebanow, Ivan J. System for child photography. 3,812,506, Cl. 354-80.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Honold, Ernst; Hubner, Werner; and Sturm, Hans-Dieter, 3,811,687.

Kleiner, Hans-Jerg; and Rittner, Siegbert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of alkane phosphonic acid diesters. 3,812,222, Cl. 260-970.000.

Klenk, Ludwig: *See—*
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, 3,811,923.

Klockner-Werke AG.: *See—*
Wehner, Karl-Heinz; Bell, Gunter; and Watermann, Willy, 3,811,288.

Kloos, William W.: *See—*
Osterkorn, Charles Louis; Buck, Leo V.; Kloos, William W.; and Marino, Salvatore M., 3,812,322.

Klotzer, Wilhelm: *See—*
Bretschneider, Hermann; Klotzer, Wilhelm; and Franzmair,, 3,812,170.

Klukos, Edward O. Method for screw-mounting objects to a work piece. 3,811,170, Cl. 29-429.000.

Knapp, Heinrich: *See—*
Eckert, Konrad; and Knapp, Heinrich, 3,811,419.

Knapp, Wilhelm; and Ohmayer, Siegfried, to ITT Industries, Inc. Self-adjusting device for disc brakes. 3,811,540, Cl. 188-196.00d.

Knoll AG, Chemische Fabriken: *See—*
Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, 3,812,258.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans George, to Eisenwerke Gesellschaft Maximilianshutte m.b.H. Tuyere for introducing oxygen and a protective medium into converter vessels. 3,811,386, Cl. 110-182.500.

Ko, Yung Ling: *See—*
Ralston, Robert E.; and Ko, Yung Ling, 3,811,955.

Kobayashi, Hideyoshi, to Kabushiki Kaisha Komatsu Seisakusho. Safety device for detecting water level in a water tight chamber of an amphibian bulldozer. 3,811,793, Cl. 417-40.000.

Kobayashi, Hisamine. Self-separating vibratory finishing apparatus. 3,811,231, Cl. 51-163.000.

Kobayashi, Juichi: *See—*
Kimura, Tadasu; Kobayashi, Juichi; and Nakamoto, Hideo, 3,812,063.

Kobayashi, Kengo; Hattori, Seiichi; and Tamura, Masaharu, to Fujitsu Limited. Adaptive control system for numerical control. 3,811,345, Cl. 82-2.00b.

Kobayashi, Torao; and Inaga, Hisashi, to Kioritz Corporation. Inboard motor boat. 3,811,399, Cl. 115-39.000.

Kobe Steel, Ltd.: *See—*
Inaba, Shin-Ichi; Okimoto, Ken-Ichi; Tamura, Setsuo; and Uenaka, Toshiyuki, 3,811,868.

Kobek, Edward F.: *See—*
Larsen, Larry D.; and Kobek, Edward F., 3,812,362.

Kobetz, Paul: *See—*
Laran, Roy J.; Kobetz, Paul; and Johnson, Robert W., Jr., 3,812,195.

Kohl, Karl. Mounting support for the knitting needle of a warp knitting machine. 3,811,298, Cl. 66-86.000.

Kohn, Gustave K.: *See—*
Brown, Melancthon S.; and Kohn, Gustave K., 3,812,174.

Kokura, Yoshiji: *See—*
Nose, Kiyoo; Kokura, Yoshiji; Hizaki, Nobuo; and Nishikawa, Shigeydshi, 3,812,407.

Kolar, Vladimir: *See—*
Peschl, Ervin; Zmatlik, Josef; Sedlecky, Jaromir; and Kolar, Vladimir, 3,811,299.

Kolb, Karl Heinz: *See—*
Pfeiffer, Heinrich; Kolb, Karl Heinz; Harwart, Alois; and Schulze, Paul E., 3,812,151.

Kolob Holding Limited: *See—*
Armstrong, Alvin P., 3,811,697.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Hakansson, Sven Anders Samuel, 3,811,272.

Kona Boats: *See—*
Page, Stewart E., 3,811,143.

Konan Camera Research Institute: *See—*
Ikegami, Yoshizo, 3,812,530.

Kondo, Tokiharu: *See—*
Okutsu, Toshimitsu; Tsuji, Nobuo; Ohi, Reiichi; and Kondo, Tokiharu, 3,812,079.

Kondrajian, Edward: *See—*
Johnson, Ernest D.; Kirschner, Gerald D.; Kondrajian, Edward; and Woodling, Gerald L., 3,811,385.

Konigsbacher, Kurt: *See—*
Corey, Harold; Bakal, Abraham; Konigsbacher, Kurt; and Schoenholz, Daniel, 3,812,268.

Koninklijke Nederlandsche Gist- en Spiritusfabriek N.V.: *See—*
Marx, Arthur F.; and Kooreman, Hermanus J., 3,812,105.

Koninklijke Nederlandsche Hoogovens en Staalfabricken N.V.: *See—*
Latenstein, Anthonie Van, 3,811,866.

Konishi, Motofumi: *See—*
Kanayama, Mitsutoshi; and Konishi, Motofumi, 3,811,772.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,811,887.
Kagami, Teruo; Fujiwhara, Mitsuto; and Endo, Takaya, 3,811,892.

Konzorr, Hubert, to Union Sils van de Loo & Co. Pedal for bicycles and similar vehicles. 3,811,339, Cl. 74-594.400.

Koo, Ronald C.; and Shurgan, Joel, to Duro-Test Corporation. Reduced impurity filament for electric lamps. 3,812,393, Cl. 313-344.000.

Kooreman, Hermanus J.: *See—*
Marx, Arthur F.; and Kooreman, Hermanus J., 3,812,105.

Koppers Company, Inc.: *See—*
Hinchliffe, Basil W., 3,812,018.
Tatterson, Benjamin F., 3,811,572.

Koshiba, Masao: *See—*
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,118.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.

Kothe, Erich W.; Ebel, Lawrence C.; and E'Ascoli, Ralph C., to Anaconda Company, The, mesne. Pressure resistant cable. 3,812,283, Cl. 174-105.00r.

Kotter, James I. Pipe holding attachment for C-clamps and vises. 3,811,668, Cl. 269-258.000.

Koyanagi, Shiniche; Kitamura, Hajima; and Maruyama, Akiyoshi, to Shinetsu Chemical Company. Method for manufacturing vinyl chloride graft polymers. 3,812,215, Cl. 260-878.00r.

Kozel, James A.; and Ostrowski, Edwin A., to Controls Company of America. Drain valve. 3,812,398, Cl. 251-331.000.

Kozlovsky, Viktor Stepanovich: *See—*
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.

Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, to Knoll AG, Chemische Fabriken. Pharmaceutical composition essentially containing and method of treatment with, 3 beta-acetoxy 11-oxo noroleanene-(12) 20 beta-carboxylic acid N-methyl piperidol-(4 ester. 3,812,258, Cl. 424-267.000.

Kramer, David C., to Rusco Industries, Inc. Structure and method of making magnetic cards. 3,811,977, Cl. 156-108.000.

Kramer, Lothar: *See—*
Hirschberg, Klaus; and Kramer, Lothar, 3,812,231.

Kramer, Pieter: *See—*
Jacobs, Bernardus Antonius; and Kramer, Pieter, 3,811,779.

Kramer, Willi: *See—*
Muskulus, Willi; and Kramer, Willi, 3,811,630.

Krapcho, John, to Squibb, E. R., & Sons, Inc. Benzothiazines. 3,812,114, Cl. 260-243.00r.

Krasin, Lester Q.: *See—*
Crossland, Edward J.; Blossom, James H.; and Krasin, Lester Q., 3,812,462.

Kraushaar, William L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,812,358.

Krenowicz, Robert A.; and Scott, William P., to Continental Oil Company. Lubricating oils. 3,812,035, Cl. 252-59.000.

Kresse, Heinz, to Siemens A.G. Pressure receiver. 3,811,427, Cl. 128-2.05d.

Kronberg, George H.: *See—*
Adams, Herbert J. F.; Kronberg, George H.; and Takman, Bertil H., 3,812,147.

Kroyer, Karl Kristian Kobs: *See—*
Kroyer, Karl Kristian Kobs; and Fredsted, Tage (said Fredsted assor. to said), 3,811,905.

Kroyer, Karl Kristian Kobs; and Fredsted, Tage, said Fredsted assor. to said Kroyer, Karl Kristian Kobs. Aggregate for road construction and method for the production of said aggregate. 3,811,905, Cl. 106-288.00b.

Krumbein, Fritz: *See—*
Rube, Helmut; and Krumbein, Fritz, 3,811,760.

Krumbein, Fritz, to Bosch, Robert, Photokino GmbH. Drive means for film advancing sprockets in cinematographic apparatus. 3,811,761, Cl. 352-166.000.

Krummel, Harry Karl: *See—*
Connor, Daniel S.; and Krummel, Harry Karl, 3,812,044.

Krylov, Valentin Feoktistovich: *See—*
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.

Krzyzewski, Henry A.: *See—*
Howell, James E.; Hudson, Wayne T.; and Krzyzewski, Henry A., 3,812,494.

Kubo, Shuniti: *See—*
Saito, Takashi; and Kubo, Shuniti, 3,811,914.

Kubota, Shiegeki: *See—*
Fudemoto, Isao; Kubota, Shiegeki; and Hayashi, Tatsuki, 3,812,436.

Kuehl, Donald K.; Fanti, Roy; and Galasso, Salvatore F., to United Aircraft Corporation. Process for pyrolytic deposition of boron on a metal substrate. 3,811,930, Cl. 117-107.20r.

Kuehn, Erich: *See—*
D'Alelio, Gaetano F.; and Kuehn, Erich, 3,812,047.

Kuemmerlin, Walter, to Zarges Leichtbau GmbH, Firma. Joint for collapsible ladders. 3,811,151, Cl. 16-144.000.

Kuenzig, Fred J.; and Montano, Joseph V., to Galion, Jeffrey, Inc. Chain construction. 3,811,334, Cl. 74-251.00r.

Kuhling, Dieter: *See—*
Heinz, Arnold; and Kuhling, Dieter, 3,812,247.

Kuhlkamp, Alfred; Rauterkus, Karl Josef; Schaefer, Horst; and Seip, Detlev, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of paper coating compositions. 3,812,072, Cl. 260-29.6rw.

Kuhnelt, Herbert F., to Hoerbiger Ventilwerke Aktiengesellschaft. Pneumatic pulse diverters. 3,811,458, Cl. 137-106.000.

Kullman, Russell M. H.: *See—*
Cashen, Norton A.; Kullman, Russell M. H.; and Reinhardt, Robert M., 3,811,210.

Kulykivsky, Gregory H.: *See—*
Berk, Walter E.; and Kulykivsky, Gregory H., 3,812,513.

Kume, Yoshiharu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.

Kunchal, Kumar: *See—*
Adams, Harry A.; Kunchal, Kumar; and Callahan, James L., 3,812,236.

Kunitomi, Yoshio, to Citizen Watch Co., Ltd. Apparatus for automatic digital measurement of watch performance by utilizing ticks. 3,811,315, Cl. 73-6.000.

Kurasawa, Yoshiya; and Otani, Syuichi, to Nissan Motor Company, Limited. Safety device for motor vehicle. 3,811,702, Cl. 280-150.05b.

Kurita, Masaru: *See—*
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.

Kurz, Bruno F.; and Ferro, Armand P., to General Electric Company. Photodiode with patterned structure. 3,812,518, Cl. 357-30.000.

Kustom Electronics, Inc.: *See—*
Aker, John L., 3,812,278.

Kvaerner Brug A/S: *See—*
Wessel, Per Christian; and Eldby, Per, 3,811,396.

Kvaternik, Joseph, to Electronic Memories & Magnetics, Inc. Miniature type switch probe for testing integrated circuit assemblies or the like. 3,812,311, Cl. 200-61.420.

La Calhene and Piercan S.A.: *See—*
Segonzac, Jean-Michel; and Lucas, Jean-Marie, 3,811,132.

La Rocca, Gerard A. Liquid coating measuring apparatus. 3,812,421, Cl. 324-58.50b.

La Telemecanique Eletrique: *See—*
Lalande, Michel, 3,812,416.

La Violette, Fred G., to Environment/One Corporation. Low cost portable room air cleaner. 3,812,370, Cl. 250-527.000.

Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, to Ford Motor Company. Two-step method of making a color picture tube. 3,811,910, Cl. 117-17.000.

Lacroix, Armand Jean-Baptiste: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; Castellant, Jean-Pierre Jules Emile; and Lacroix, Armand Jean-Baptiste, 3,811,276.

Ladell, John L., to Ontario Research Foundation. Method of forming iron ore pellets using a finely divided tree bark binder. 3,811,865, Cl. 75-3.000.

Laevosan-Gesellschaft Chem.-Pharm. Industrie Franck & Dr. Freudl: *See—*
Nitsch, Ernst, 3,812,010.

Lafont, Andre: *See—*
Pont, Dominique; Lafont, Andre; and Voisin, Alain, 3,811,527.

Lahti, Archie E.; and McBresth, Donald G., to Sperry Rand Corporation. Processor interrupt pointer. 3,812,463, Cl. 340-172.500.

Lahti, Uolevi L. Spherical loudspeaker. 3,812,301, Cl. 179-146.00b.

Laing, Nikolaus. Rotary heat exchangers in the form of turbines. 3,811,495, Cl. 165-85.000.

Lalande, Michel, to La Telemecanique Eletrique. Forced commutation invertors. 3,812,416, Cl. 321-45.00r.

Lalangas, Petros: *See—*
Bridges, Thomas F.; Lalangas, Petros; and Sjostrom, Carl H., 3,811,593.

Lambe, John J.: *See—*
Jaklevic, Robert C.; Lambe, John J.; and Mikkor, Mati, 3,811,752.

Lancz, Albert Jay, to Colgate-Palmolive Company. Germicidal liquid cleaner. 3,812,046, Cl. 252-106.000.

Landler, Josef; and Spietschka, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing naphthalene-1,8-dicarboxylic acid imide. 3,812,130, Cl. 260-281.000.

Landrum, Leslie H.; and Huppe, Robert L., to Pritchard, J. F., and Company. Combined process for recovering S from H_2S in claus plant and treating tailgas to remove H_2S and SO_2. 3,812,243, Cl. 423-574.000.

Lane, Richard N.; and Horton, Claude W., to United States of America, Navy, mesne. Hydro-acoustic filter. 3,812,456, Cl. 340-8.00r.

Lange, Harold Carl: *See—*
MacLeay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, 3,812,094.

Lapeyre, James M. Method for extracting means from crustaceans. 3,812,271, Cl. 426-312.000.

Lapporte, Seymour J.; and Toland, William G., to Chevron Research Company. Methylene and oxymethylene bis-ester production. 3,812,176, Cl. 260-494.000.

Laran, Roy J.; Kobetz, Paul; and Johnson, Robert W., Jr., to Ethyl Corporation. Preparation of dimethyl beryllium. 3,812,195, Cl. 260-665.00r.

Larnerd, John D.; McGarigle, Donald M.; and Samuelson, Carl E., to International Business Machines Corporation. Method of aligning and attaching circuit devices on a substrate. 3,811,186, Cl. 29-626.000.

Larsen, Farrell G.: *See—*
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., 3,811,381.

Larsen, Larry D.; and Kobek, Edward F., to Honeywell Inc. Smoke detector circuit. 3,812,362, Cl. 250-370.000.

Larson, Charles O., to Larson, Chas. O., Co. Method forming a drive fastener device. 3,811,269, Cl. 59-77.000.

Larson, Chas. O., Co.: *See—*
Larson, Charles O., 3,811,269.

Larson, William M.; and Bender, Newell R., to Goodyear Tire & Rubber Company, The. Polyurethane composition and laminates made therewith. 3,812,003, Cl. 161-156.000.

Lashley, Raymond. High speed train track. 3,811,616, Cl. 238-150.000.

Lasky, Ronald J., to Stock Equipment Company. Method of compensating for unknown length of transmission line in electromagnetic tachometer. 3,812,429, Cl. 324-166.000.

Lasre Sciences, Inc.: *See—*
Gugliotta, George; and Raimo, Anthony J., 3,812,349.

Latenstein, Anthonie Van, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Process and apparatus for the manufacturing of roasted, baked or sintered ore pellets as well as the ore pellets thus obtained. 3,811,866, Cl. 75-5.000.

Lathers, Paul Anthony, to Unipas, Inc. Control unit. 3,811,394, Cl. 114-144.00r.

Lavoie, Gilbert V. Bag opening and emptying machine. 3,811,586, Cl. 214-305.000.

Lawrence, Arthur Charles; and Grgich, Milovan. Vapour heating and vapour generating units. 3,811,415, Cl. 122-478.000.

Lawson, Jerry Joe: *See—*
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, 3,811,264.

Lazarus, Martin: *See—*

Szabo, Louis R.; and Lazarus, Martin, 3,812,350.

Le Marchand, Alain, to Societe Anonyme D.B.A. Distributing valve. 3,811,472, Cl. 137-625.680.

Le Materiel Compact: *See*—
Cordonnier, Gerard Anatole, 3,811,763.

Le Poole, Jan Bart. Permanent magnet lens systems. 3,812,365, Cl. 250-396.000.

Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., to Squibb, E. R., & Sons, Inc. 7-(1,4-Cyclohexadienyl-acylamino)cephalosporins. 3,812,110, Cl. 260-240.00g.

Lee, Raymond, Organization, Inc., The: *See*—
Cocker, Bernice, 3,811,533.
Hand, Robert G., 3,811,344.
Wyler, Mark, 3,811,356.

Leger, Roland, to Faiveley S.A. High speed current collection. 3,812,304, Cl. 191-66.000.

Lehigh Press, Inc., The: *See*—
Braber, Robert J., 3,811,564.

Lehmann, Claude: *See*—
Dietrich, Henri; and Lehmann, Claude, 3,812,144.

Lehner-Stirnemann, Max. Method for making price shields or the like. 3,811,985, Cl. 156-277.000.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. O-(α-hydroxycinnamoyl) benzoic acid and related compounds. 3,812,181, Cl. 260-520.000.

Leinkram, Charles Z.; and Oaks, William D., to United States of America, Navy. Approach to shingling of solar cells. 3,811,181, Cl. 29-572.000.

Lejeune, Daniel, to Compagnie General des Etablissements Michelin raison Sociale Michelin & Cie. Reinforced resin wheel. 3,811,737, Cl. 301-63.0pw.

Lemelson, Jermone H. Video detection system. 3,812,287, Cl. 178-6.800.

Lemelson, Jerome H. Credit verification apparatus. 3,812,461, Cl. 340-149.00a.

Lengsfeld, Wolfgang, to BASF Wyandotte Corporation. Process for making oxyalkylated polyamino-1,3,5-triazines. 3,812,122, Cl. 260-249.600.

Lenz, Conrad. Straining vat and process. 3,811,372, Cl. 99-277.100.

Leonard, Ronald J.; and Ahrens, James M., to Baxter Laboratories, Inc. Method for testing membranous devices for leaks. 3,811,317, Cl. 73-40.000.

Lerwick, Everett R.; and Cook, William A. Endarterectomy apparatus. 3,811,446, Cl. 128-303.000.

Lescop, Pierre; Michel, Pierre; and Vigneau, Joel Olivier, to Societe Nationale d'Etude & de Construction de Moteurs d'Aviation (snecma). Process for improving the resistance of surfaces against erosion. 3,811,919, Cl. 117-62.000.

Lesh, Nathan George; O'Day, Peter Joseph; and Unger, Burton Abram, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of a bilevel thin film integrated circuit. 3,811,973, Cl. 156-3.000.

Lesk, Adolf; Baumann, Rudolf; and Link, Otmar, to Zimmermann, Adolf, Maschinenbau. Apparatus for reversing the conveying-air in pneumatic suction-conveying installations. 3,811,248, Cl. 55-272.000.

Levene, Leon, to Owens-Illinois, Inc. Process for producing protective glass coatings. 3,811,918, Cl. 117-47.00h.

Lever Brothers Company: *See*—
Alsbury, Allan, 3,812,060.

Levin, Herbert L., to International Telephone and Telegraph Corporation. Transit/combination case providing unique latch accessibility and novel stacking and latching features. 3,811,747, Cl. 312-308.000.

Levine, Seymour D.: *See*—
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., 3,812,092.

Lewek, Stanley S.: *See*—
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.

Lewis, Geoffrey Arthur, to Lucas, Joseph, (Industries) Limited. Fuel pumps for use in conduction with gas turbine engines. 3,811,797, Cl. 417-199.00a.

Liang, Charles C.; McDonald, Bruce; and Vierow, William F., to Mallory, P. R., & Co., Inc. Electric cell with capacitance buffer. 3,811,944, Cl. 136-6.00r.

Library Binding Service, Inc.: *See*—
James, Fred, 3,811,998.

Licentia Potent-Verwaltungs-GmbH: *See*—
Trenkler, Gerhard, 3,812,428.

Lievens, Ronald J.: *See*—
Mikulina, Thomas W.; Lievens, Ronald J.; and Brockman, George T., 3,811,790.

Light, Gordon S.: *See*—
Cunningham, Russell E.; and Light, Gordon S., 3,812,347.

Lilly, Eli, and Company: *See*—
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.

Lim, Frank H.: *See*—
Burnett, David B.; Alston, Robert B.; and Lim, Frank H., 3,811,501.
Burnett, David B.; and Lim, Frank H., 3,811,503.

Lin, Chao-Han; and Wright, Arthur J., to National Cash Register Company, The. Benzopyran compounds. 3,812,157, Cl. 260-345.200.

Lindeman, Richard Jay; and Pestka, John August. Panel mounting fastener. 3,811,154, Cl. 24-73.00p.

Lindmayer, Joseph, to Communications Satellite Corporation. Fine geometry solar cell. 3,811,954, Cl. 136-89.000.

Lindstrom, Roald W.: *See*—
Bauer, Donald J.; Lindstrom, Roald W.; and Schultze, Lawrence E., 3,812,232.

Link, Otmar: *See*—
Lesk, Adolf; Baumann, Rudolf; and Link, Otmar, 3,811,248.

Linke, Siegfried. Magnetic head having guide surfaces for the magnetic recording medium made of ceramic material. 3,812,536, Cl. 360-122.000.

Linn, John C.: *See*—
Ranatza, Samuel; and Linn, John C., 3,812,344.

Linn, Thomas Daniel; Klauser, John George; Jordan, Alexander; and Tikijian, George Haig, to Union Carbide Corportion. Numarial control system and method for variable shape programming and control of machine motion. 3,812,474, Cl. 340-172.500.

Linville, Creath Q. Preparation of an additive for alcoholic beverages. 3,812,272, Cl. 426-380.000.

Lippke, Paul R.; deceased (by Hiemke, Rudolf; executor). Device for electro-optically ascertaining holes in moving webs. 3,812,348, Cl. 250-561.000.

Lipton, Thomas J., Inc.: *See*—
Sanderson, Gary Warner; and Coggon, Philip, 3,812,266.

Liston, Joseph: *See*—
Roth, Larry L.; and Liston, Joseph, 3,811,804.

Liston, Max D., to Abbott Laboratories. Chemical analysis cuvette. 3,811,780, Cl. 356-180.000.

Lloyd, Henry Bassell: *See*—
Middleton, Malcolm Cecil; and Lloyd, Henry Bassell, 3,811,490.

Lohmuller, Ulrich, to Wintershall Aktiengesellschaft. Method for the prevention of the formation of solid residues on thermal treatment of furfural. 3,812,163, Cl. 260-347.900.

Lommers, Anthonius Johannes Josephus Cornelis; and Van Alphen, Adrianus Joannes Maria. Integrated differential amplifier. 3,812,434, Cl. 330-19.000.

Lord, Peter Herent. Catheters. 3,811,450, Cl. 128-349.00r.

Losinger AG: *See*—
Villiger, Felix; and Gerber, Albert, 3,811,480.

Lowy, George W., to Baxter Laboratories, Inc. Multi-wavelength photometer employing a rotating variable wavelength filter. 3,811,781, Cl. 356-188.000.

Lubowitz, Hyman R., to TRW Inc. Polybasic aromatic carboxylic acids, esters and anhydrides. 3,812,159, Cl. 260-346.300.

Lucas Aerospace Limited: *See*—
Wise, John Arthur; Wellings, Raymond Joseph; and Williams, Eric, 3,811,281.

Lucas, Jean-Marie: *See*—
Segonzac, Jean-Michel; and Lucas, Jean-Marie, 3,811,132.

Lucas, Joseph, (Electrical) Limited: *See*—
Rees, Alfred, 3,812,305.

Lucas, Joseph, (Industries) Limited: *See*—
Lewis, Geoffrey Arthur, 3,811,797.
Needham, Victor; and Bowen, Brian Francis, 3,812,019.

Lucien International: *See*—
Prost, Roger, 3,812,015.

Lucki, Stanley J.: *See*—
Chen, Nai Yuen; and Lucki, Stanley J., 3,812,199.

Luk Lamellen- und Kupplungsbau GmbH: *See*—
Maucher, Paul, 3,811,544.

Lumbeck, Gerd: *See*—
Mueller, Hans-Karl; and Lumbeck, Gerd, 3,812,269.

Lupkas, Raymond R.; and Grimaldi, Dominick L., to Pitney-Bowes, Inc. Flap turning and sealing system for postage meter mailing machine. 3,811,407, Cl. 118-32.000.

Lurie, Randolph D., to Continental Can Company, Inc. Laminate construction. 3,812,002, Cl. 161-119.000.

Lutz, Roman, to Siemens Aktiengesellschaft. System for indicating parity-disturbing interferences in transmissions for teleprinters. 3,812,290, Cl. 178-23.00a.

Luvet, Robert: *See*—
Guillet, Henri; and Luvet, Robert, 3,811,757.

Ly, Manuel G.: *See*—
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,812,187.

M&W Gear Company: *See*—
Meiners, Elmo R., 3,811,387.

MacDonald, Alfred P. Sander scraping attachment. 3,811,160, Cl. 29-76.00a.

MacGovern, Alan J., to Itek Corporation. Encoder readout system. 3,812,352, Cl. 250-23.0zg.

MacKenzie, John D., to University of California, The Regents of the. Method of making foam glass products with excreta and glass batch. 3,811,851, Cl. 65-22.000.

MacLean-Fogg Lock Nut Co.: *See*—
Grube, William L., 3,811,171.

MacLeay, Ronald Edward: *See*—
Sheppard, Chester Stephen; MacLeay, Ronald Edward; and Bafford, Richard Anthony, 3,812,095.

MacLeay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, to Pennwalt Corporation. Tertiary aliphatic alpha-(imido)azo compounds. 3,812,094, Cl. 260-152.000.

MacNeill, John H.; and Willey, Ronald R., to Optical Business Machines, Inc. Opticscan arrangement for optical character recognition systems. 3,812,459, Cl. 340-146.30f.

Macovski, Albert; and Schaefer, Louis F., to United States of America, National Aeronautics and Space Administration, mesne. Two-dimensional filtering for encoded television camera. 3,812,527, Cl. 358-47.000.

Maher, Galeb H., to Sprague Electric Company. Low temperature fired electrical components and method of making same. 3,811,937, Cl. 117-217.000.

Mahood, James A., to Bio-Logics Systems, Inc. Noise rejecting, demand variable real time clock. 3,812,472, Cl. 340-172.500.

Maillet, Wilfrid G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., 3,812,430.

Mallory, P. R., & Co.: *See—*
Anderson, Daniel J., 3,812,038.

Mallory, P. R., & Co., Inc.: *See—*
Liang, Charles C.; McDonald, Bruce; and Vierow, William F., 3,811,944.
Ralston, Robert E.; and Ko, Yung Ling, 3,811,955.

Malone, Paul E., to General Electric Company. System for independent or common control of prime movers. 3,812,377, Cl. 290-4.000.

Maloney, Dennis J.: *See—*
Gasparaitis, Bernard; and Maloney, Dennis J., 3,812,310.

Manke, Girard M.: *See—*
Mineck, David W.; and Manke, Girard M., 3,812,333.

Mann, Douglas G., to Clambake International, Incorporated. Cooking apparatus. 3,811,374, Cl. 99-341.000.

Mann, Ronald P., to Johnson Service Company. Remote set point control. 3,812,465, Cl. 340-172.500.

Mansfield Sanitary, Inc.: *See—*
Drouhard, Alfred J., Jr.; and Weeks, John R., Jr., 3,811,135.

Mansnerus, John A.; and Dombrowski, Ted A., to Bell Company, Inc., The. Lamp for producing colored flame. 3,811,817, Cl. 431-126.000.

Marchant, John C.; and Tinney, John R., to Eastman Kodak Company. Laser stabilization and/or photodevelopment of silver halide materials. 3,811,885, Cl. 96-27.00r.

Marchese, Vincent P.; and Rakowsky, Edward L., to Singer Company, The. Apparatus for remote ignition of explosives. 3,811,359, Cl. 89-1.813.

Marciniak, John J., to Harris-Intertype Corporation. Sheet material trimming method and apparatus. 3,811,350, Cl. 83-39.000.

Marcovitch, Jacob, to Rotary Profile Anstalt. Profiling of workpieces. 3,811,308, Cl. 72-210.000.

Mare, Peter D.; and Ross, Albert L. Band label applying and container positioning apparatus. 3,811,986, Cl. 156-494.000.

Mareau, Wayne M.: *See—*
Clecak, Nicholas J.; Cox, Robert J.; and Mareau, Wayne M., 3,812,162.

Maremont Corporation: *See—*
Glazener, Carey A., 3,811,628.

Margetts, Hugh Grenville, to Girling Limited. Shoe drum brakes. 3,811,537, Cl. 188-79.50p.

Marie Luise Batzner Coulthard: *See—*
Coulthard, James Albert, 3,811,750.

Marino, Salvatore M.: *See—*
Osterkorn, Charles Louis; Buck, Leo V.; Kloos, William W.; and Marino, Salvatore M., 3,812,322.

Markawski, Stanley J., to United Aircraft Corporation. Annular combustion chamber for dissimilar fluids in swirling flow relationship. 3,811,277, Cl. 60-39.650.

Markovitz, Mark, to General Electric Company. Hardenable composition consisting of an epoxy resin and a metal acetylacetonate. 3,812,214, Cl. 260-830.0tw.

Maroth, Arthur M. Hypodermic syringe holder and applicator. 3,811,442, Cl. 128-218.00r.

Marse, Allan V.: *See—*
Metcalfe, Joseph E., III; Rightmire, Robert A.; and Marse, Allan V., 3,811,947.

Marsh, James Courtland, Jr., to RCA Corporation. Independent electron gun bias control. 3,812,397, Cl. 315-31.0tv.

Marshall, Albert H.; and Siragusa, George A., to United States of America, Navy. Programmable laser marksmanship trainer. 3,811,204, Cl. 35-25.000.

Martel, Leslie B.: *See—*
Defg, Emil W.; Silverberg, Carl G.; and Martel, Leslie B., 3,811,857.

Martenson, Earl D.: *See—*
Beaty, Ronald W.; and Martenson, Earl D., 3,811,787.

Martin, Albert E.: *See—*
Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., 3,811,974.

Martin, Anthony N., to United Aircraft Corporation. Slaved fuel control for multi-engined aircraft. 3,811,273, Cl. 60-39.150.

Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy AG. 2,4,5-Halogenimidazoles for combating insects and acarina. 3,812,260, Cl. 424-273.000.

Martin, John Henry Edward James; and Kantor, Sidney, to American Cyanamid Company. Antibiotic BL580. 3,812,249, Cl. 424-121.000.

Martin Marietta Corporation: *See—*
Hopper, Frederick W., 3,811,641.

Martin, Norman Eugene. Micro-wave heater. 3,812,315, Cl. 219-10.550.

Martin, Roger C., to Griffis, Edgar E. Screw conveyor steamer for scallop processing. 3,811,148, Cl. 15-3.140.

Martin, Thomas W.: *See—*
Joo, Louis A.; Martin, Thomas W.; and McKee, John A., 3,811,927.

Martin, Wilhelm N.: *See—*
Wilkinson, Michael C.; Blais, Leo; Martin, Wilhelm N.; and Tesainer, Silvano, 3,811,987.

Marui, Masatoshi: *See—*
Nakajima, Tohru; and Marui, Masatoshi, 3,812,497.

Marusak, Francis J.: *See—*
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.

Maruyama, Akiyoshi: *See—*
Koyanagi, Shiniche; Kitamura, Hajima; and Maruyama, Akiyoshi, 3,812,215.

Maruyama, Isamu: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.

Marx, Arthur F.; and Kooreman, Hermanus J., to Koninklijke Nederlandsche Gist- en Spiritusfabriek N.V. 19-Nor-progesterone derivatives. 3,812,105, Cl. 260-239.55c.

Marx, Richard Everet, to RCA Corporation. Impedance control using transferred electron devices. 3,812,437, Cl. 333-81.00a.

Maschinenfabrik Spaichingen GmbH: *See—*
Hamma, Gerhard, 3,811,297.

Mason, Leroy W.: *See—*
Sauey, Lawrence K.; Mason, Leroy W.; and Rau, Gerald A., 3,811,216.

Massachusetts Institute of Technology: *See—*
Morgenthaler, Frederic R., 3,811,941.

Massaro, Donald J.: *See—*
Higgins, Ronald W.; and Massaro, Donald J., 3,812,535.

Massey, Lester G.; Tarman, Paul B.; and Huebler, Jack, to Consolidated Natural Gas Service Co., Inc. Oxygen process pellets. 3,812,048, Cl. 252-186.000.

Massey-Ferguson Inc.: *See—*
Reuter, Floyd W., 3,811,232.
Thompson, Howard G.; and Kay, John A., Jr., 3,811,516.

Masterpiece, Inc.: *See—*
Dieffenbach, Percy, 3,811,991.

Mastrobuono, Antonio C. Rotary turbine engine. 3,811,275, Cl. 60-39.340.

Masuda, Katsutada; and Imashiro, Yoshio, to Takeda Chemical Industries, Ltd. N-acyl sydnonimine derivatives. 3,812,128, Cl. 260-268.00n.

Matisa Materiel Industriel S.A.: *See—*
Buchter, Jean-Edouard; and Jaeggi, Hans-Peter, 3,811,382.

Matsubs, Mutsuhide; Ogiso, Mitsutoshi; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Camera provided with a device for automatically photographing dates of photographing. 3,812,508, Cl. 354-106.000.

Matsuhisa, Koh: *See—*
Suzuki, Takami; and Matsuhisa, Koh, 3,811,546.

Matsumoto, Yoshimitsu: *See—*
Yoshizumi, Shuzo; and Matsumoto, Yoshimitsu, 3,812,318.

Matsuo, Yoshihiro: *See—*
Hirose, Namio; Matsuo, Yoshihiro; and Hayakawa, Shigeru, 3,811,938.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hirose, Namio; Matsuo, Yoshihiro; and Hayakawa, Shigeru, 3,811,938.
Izura, Yoshiteru; and Okano, Keisuke, 3,812,522.
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,811,640.
Nakamura, Harutoki, 3,811,845.
Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, 3,812,488.
Yoshizumi, Shuzo; and Matsumoto, Yoshimitsu, 3,812,318.

Matsushita, Sachio: *See—*
Shibaoka, Haruo; and Matsushita, Sachio, 3,811,888.

Matsuzaki, Toichiro: *See—*
Mima, Hiroyuki; and Matsuzaki, Toichiro, 3,812,251.

Matsuzawa, Shoya: *See—*
Kadowaki, Takashi; Itoyama, Kenji; and Matsuzawa, Shoya, 3,812,203.

Mattix, Jacob M. Concealed corner locking clip. 3,811,241, Cl. 287-189.350.

Maucher, Paul, to Luk Lamellen- und Kupplungsbau GmbH. Clutch with spring loaded operator fulcrum. 3,811,544, Cl. 192-89.00b.

Maurer, James Herbert, to Penumo Dynamics Corporation. Mechanically fastened transistion fitting. 3,811,958, Cl. 136-233.000.

Maydowski, Reinhard: *See—*
Mayer, Manfred; and Maydowski, Reinhard, 3,811,631.

Mayer, Manfred; and Maydowski, Reinhard, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Winding tube changing mechanisms. 3,811,631, Cl. 242-18.00r.
Mayer, Max. Pneumatic holding device. 3,811,667, Cl. 269-23.000.
Mayer, Vita & C. gia F. lli Vita S.a.s.: *See*—
Ghisoni, Pietro, 3,811,993.
Mayfield, Susan. Puzzle for psychological testing. 3,811,203, Cl. 35-22.00r.
Mayo, Ralph E.: *See*—
Delany, Edward B.; and Mayo, Ralph E., 3,812,367.
Mayrose, William Carl: *See*—
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, 3,811,264.
Maytum, Alan T.: *See*—
Johnson, James D.; and Maytum, Alan T., 3,812,391.
Mc Burnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., to Velto Industries, Ltd. Door latching assembly. 3,811,719, Cl. 292-254.000.
McBresth, Donald G.: *See*—
Lahti, Archie E.; and McBresth, Donald G., 3,812,463.
McCandless, William J. C.: *See*—
Diebler, Herman G.; Gyori, Steven Andrew; and McCandless, William J. C., 3,811,842.
McConnell, William C., to PPG Industries, Inc. Control of Pythium spp. and Sclerotium spp. using azides. 3,812,254, Cl. 424-226.000.
McCoy, Frederic C.; and Schlicht, Raymond C., to Texaco Inc. Selective adsorption of phenols from solution in water. 3,812,031, Cl. 210-30.000.
McCulloch, Alister L., to Graviner (Colnbrook) Limited. Fire extinguishing systems. 3,811,511, Cl. 169-28.000.
McDonald, Bertrand Norval: *See*—
Ferraro, John J.; and McDonald, Bertrand Norval, 3,811,498.
McDonald, Bruce: *See*—
Liang, Charles C.; McDonald, Bruce; and Vierow, William F., 3,811,944.
McDonnell Douglas Corporation: *See*—
Meier, Rudolf H.; Day, Richard P.; and Thompson, Christopher J. C., 3,812,359.
McFadden, Lawrence D. Muffler and muffler core puncher. 3,811,352, Cl. 83-54.000.
McFarland, A. Rae: *See*—
Keeley, Robert A.; and McFarland, A. Rae, 3,811,402.
McGarigle, Donald M.: *See*—
Larnerd, John D.; McGarigle, Donald M.; and Samuelson, Carl E., 3,811,186.
McGee, John K.; and Holbert, Marvin L., Jr., to Gray Tool Company. Full bare casing head. 3,811,709, Cl. 285-39.000.
McInerney, Charles E.; and Winiarz, Olgiero S., to Garrett Corporation, The. Bearing. 3,811,741, Cl. 308-12.200.
McKee, John A.: *See*—
Joo, Louis A.; Martin, Thomas W.; and McKee, John A., 3,811,927.
McLaughlin, Carol Lynn: *See*—
Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,812,255.
McMullen, John J., Associates, Inc.: *See*—
Bridges, Thomas F.; Lalangas, Petros; and Sjostrom, Carl H., 3,811,593.
McNamara, Albert C., Jr., to Esquire Inc. Lighting fixture lens. 3,812,342, Cl. 240-46.010.
McSparran, Ray A.: *See*—
Abraham, Dennis G.; and McSparran, Ray A., 3,812,414.
Medical Development Corporation: *See*—
Holbrook, Le Grand K., 3,811,485.
Mees, Bernhard: *See*—
Heise, Hartmut; and Mees, Bernhard, 3,812,138.
Meier, Rudolf H.; Day, Richard P.; and Thompson, Christopher J. C., to McDonnell Douglas Corporation. Exoatmospheric environmental test apparatus. 3,812,359, Cl. 250-347.000.
Meijer, Roelf Jan; Neelan, Gregorius Theodorus Maria; and Vree, Jules Herman, to U.S. Philips Corporation. Heat exchanger. 3,811,497, Cl. 165-157.000.
Meiners, Elmo R., to M&W Gear Company. Method and apparatus for minimum tillage farming. 3,811,387, Cl. 111-1.000.
Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. Imidazolyl ketones. 3,812,142, Cl. 260-309.000.
Melco Industries Inc.: *See*—
Conforti, Arthur R., 3,811,391.
Mell, Leonard E.: *See*—
Crosser, David Keith; Mell, Leonard E.; and Reuvers, John F., 3,812,532.
Melle-Bezons: *See*—
Bouniot, Albert, 3,812,161.
Memorex Corporation: *See*—
Higgins, Ronald W.; and Massaro, Donald J., 3,812,535.
Menzel, John K.: *See*—
Press, Irving D.; Rink, Helm A.; and Menzel, John K., 3,811,649.
Menzel, Waldemar, to Ireks Arkady G.m.b.H., Firma. Ice cream machine. 3,811,494, Cl. 165-65.000.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and Novello, Frederick C., 3,812,136.
Engelhardt, Edward L.; and Christy, Marcia E., 3,812,177.
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,812,187.
Shen, Tsung-Ying; and Jones, Howard, 3,812,109.
Shen, Tsung-Ying; and Jones, Howard, 3,812,180.
Merkle, Kurt; Fuchs, Otto; Troster, Helmut; and Noetzel, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Day light fluorescent pigments and process for their preparation. 3,812,051, Cl. 252-301.20r.
Merser, Francis Gerard. System for raising sails. 3,811,158, Cl. 24-239.000.
Messer Griesheim GmbH: *See*—
Hahn, Gunter; and Hannappel, Gunther, 3,812,412.
Metcalfe, Joseph E., III; Rightmire, Robert A.; and Marse, Allan V., to Standard Oil Company, The. Electrical energy storage device utilizing an electrode composed of an amorphous carbon and sulfur-carbon complex. 3,811,947, Cl. 136-6.0lf.
Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 2,3-Dihydro-1,4-benzodiazepines. 3,812,103, Cl. 260-239.30d.
Metlesics, Werner; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. Process for 2,3-dihydro-5-phenyl-5H-imidazo [2,1-a]-isoindoles. 3,812,143, Cl. 260-309.600.
Metropolitan Watersaving Co., Inc.: *See*—
Throckmorton, Thomas Marvin; and Crawford, Charles M., III, 3,811,134.
Meussner, Russell A.: *See*—
Howe, David G.; and Meussner, Russell A., 3,811,185.
Meyer, Roth & Pastor Machinenfabrik GmbH: *See*—
Rahn Paul, 3,811,268.
Michel, Pierre: *See*—
Lescop, Pierre; Michel, Pierre; and Vigneau, Joel Olivier, 3,811,919.
Michigan Chemical Corporation: *See*—
Dipietro, Joseph; and Stepniczko, Heintich E., 3,811,839.
Michishita, Katsumi: *See*—
Hosoe, Toshiaki; Okami, Yuji; Michishita, Katsumi; and Fukuda, Shuzo, 3,812,373.
Middleton, Malcolm Cecil; and Lloyd, Henry Bassell, to British Steel Corporation. Continuous casting of rimming steel. 3,811,490, Cl. 164-49.000.
Mielke, Bodo, to Roller-Werke Franke & Heidecke. Electromagnetic drive for photographic shutter diaphragms. 3,812,501, Cl. 354-44.000.
Mikkor, Mati: *See*—
Jaklevic, Robert C.; Lambe, John J.; and Mikkor, Mati, 3,811,752.
Mikulina, Thomas W.; Lievens, Ronald J.; and Brockman, George T., to Trane Company, The. Air moving apparatus. 3,811,790, Cl. 415-145.000.
Mila, Truman R.: *See*—
Fleischfresser, Gerald H.; and Mila, Truman R., 3,812,299.
Milburn, Frank L., to General Electric Company. Door seal gasket for combined microwave and self-cleaning oven. 3,812,316, Cl. 219-10.550.
Miles Laboratories, Inc.: *See*—
Bauer, Robert; Rosenfield, Richard Gordon; and Rupe, Chauncey Orvis, 3,811,840.
Miles, Peter: *See*—
Randell, Donald Richard; Miles, Peter; and Virgin, Allan Geoffrey, 3,812,193.
Miles, Thomas R., to Hines, Edward, Lumber Co. Apparatus for cutting lumber to specified clear lengths. 3,811,353, Cl. 83-71.000.
Miller, Cecil R.: *See*—
Dickinson, Ben W. O., III; Dickinson, Robert W.; and Miller, Cecil R., 3,811,424.
Miller, Edwin E.: *See*—
Endter, Dale S.; and Miller, Edwin E., 3,811,201.
Miller, Jack, to Becton, Dickinson and Company. Method and apparatus for determination of hematocrit. 3,812,425, Cl. 324-71.0cp.
Miller, Robert C.; and Carr, Walter J., Jr., to Westinghouse Electric Corporation. Perimeter intrusion detection system. 3,812,484, Cl. 340-258.00c.
Miller, Robert C., Jr.: *See*—
Burrell, Harry; and Miller, Robert C., Jr., 3,811,915.
Mills, Archie W. Automatic food holding and turning apparatus. 3,811,376, Cl. 99-427.000.
Mima, Hiroyuki; and Matsuzaki, Toichiro, to Takeda Chemical Industries, Ltd. Stabilized aqueous composition. 3,812,251, Cl. 424-148.000.
Minagawa, Nobuhiko: *See*—
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,811,913.
Minck, Robert W.; and Tischer, Ragnar P., to Ford Motor Company. Mass transportation electrode for energy conversion device. 3,811,943, Cl. 136-6.0fs.
Mindler, Fredric Alton: *See*—
Ernisse, Paul Justin; and Mindler, Fredric Alton, 3,812,498.
Mineck, David W.; and Manke, Girard M., to Collins Radio Company. Lagged roll synchronization and washout means for aircraft lateral axis control system. 3,812,333, Cl. 235-150.200.
Minieri, Pasquale P., to Tenneco Chemicals, Inc. Surface-coating compositions containing N-(substituted indazolyl-Nl-methyl)hexa methylenetetraammonium halides. 3,812,065, Cl. 260-22.00r.
Minnesota Mining and Manufacturing Company: *See*—
Elm, Robert A., 3,812,449.
Minolta Camera Kabushiki Kaisha: *See*—
Hayashi, Toshio; Yoshizaki, Akira; and Tsujimoto, Kayoshi, 3,812,499.

Minton, Richard L., to Bantam Steam Company, Inc. Heat exchanger apparatus for producing steam or the like. 3,811,414, Cl. 122-250.00r.

Miraglia, Gennaro John: *See—*
Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., 3,812,110.

Mishkin, Alexandr Ilich: *See—*
Bazhal, Anatoly Ignatievich; Mishkin, Alexandr Ilich; and Bessarab, Anatoly Antonovich, 3,811,515.

Mitani, Eisuke; Tsuyama, Hitoshi; Itoh, Michiyasu; and Taya, Shunroku, to Hitachi, Ltd. Mass-spectrometer of double focussing type. 3,812,356, Cl. 250-296.000.

Mitchell, Peter G.: *See—*
Cronson, Harry M.; and Mitchell, Peter G., 3,812,423.

Mitsubishi Petrochemical Company Limited: *See—*
Tashiro, Kijuro; Yokoyama, Masuzo; and Kitazume, Shoji, 3,812,089.
Uchiyama, Masao; and Kaneko, Norio, 3,812,196.

Mitsubishi Rayon Company Limited: *See—*
Kimura, Tadasu; Kobayashi, Juichi; and Nakamoto, Hideo, 3,812,063.

Miyahara, Kingo, to Kabushiki Kaisha Dowa. Liquid fuel burner. 3,811,818, Cl. 431-168.000.

Miyata, Etsutaro; Kamuro, Setsufumi; and Sano, Kenji, to Sharp Kabushiki Kaisha. Television channel indicator. 3,812,285, Cl. 178-5.800.

Mobil Oil Corporation: *See—*
Andress, Harry J., Jr.; and Ashjian, Henry, 3,811,847.
Chen, Nai Yuen; and Lucki, Stanley J., 3,812,199.
Snyder, Paul W., Jr., 3,812,029.
Theissen, Robert J., 3,812,184.

Moeller, Henry W. Method of cultivating mollusks. 3,811,411, Cl. 119-4.000.

Moffatt, John G.; and Russell, Alan F., to Syntex (U.S.A.) Inc. O^{2},2'-Anhydro-1-(beta-D-arabinofuranosyl)-cytosine derivatives and methods of making and related procedures. 3,812,098, Cl. 260-211.50r.

Moller, Hans Gunter. Deep-drawing mould for shaping thermoplastic panels. 3,811,810, Cl. 425-185.000.

Mollon, Leslie, to Brooks & Perkins, Incorporated. Installation of cargo handling system. 3,811,788, Cl. 408-72.000.

Monroe, George R.: *See—*
Christiansen, Carl L.; Kanter, Lawrence E.; and Monroe, George R., 3,812,475.

Monsanto Company: *See—*
Boustany, Kamel; and D'Amico, John J., 3,812,139.
Chupp, John Paul, 3,812,121.
Dobo, Emerick J., 3,811,850.
Gash, Virgil W.; and Bissing, Donald E., 3,812,183.
Petrovich, John P.; and Tyssee, Donald A., 3,812,190.
Wright, Robert Lee, 3,812,068.

Montano, Joseph V.: *See—*
Kuenzig, Fred J.; and Montano, Joseph V., 3,811,334.

Montecatini Edison S.p.A.: *See—*
Natta, Giulio; Beati, Enrico; Severini, Febo; and Toffano, Silvio, 3,812,204.

Montgomery, Carroll Sherman: *See—*
Starer, Ira; Montgomery, Carroll Sherman; and O'Bara, Edward John, 3,812,194.

Montgomery, Earl D., to American Standard Corporation. Gem faceter. 3,811,229, Cl. 51-125.000.

Montillier, Jean-Pierre, to Pitney-Bowes, Inc. Photoconductive charge-transfer complex with crystallization preventer. 3,811,879, Cl. 96-1.500.

Moody, Harold W., Jr.; and Schaefer, Donald D., to Dunham-Bush, Inc. Hydrodynamic thrust bearing arrangement for rotary screw compressor. 3,811,805, Cl. 418-88.000.

Moogk, Friedrich, to E. & A. Becker KG, Maschinen- und Getriebebau. V-belt driving device. 3,811,331, Cl. 74-230.17a.

Moore, Robert G., to Hickman Developments, Inc. Axle clamp for shear rubber vehicle suspension. 3,811,700, Cl. 280-124.00r.

Moore, Romayne T.; and Powelson, Lilliam E. Contractible level for artificial breast alignment. 3,811,197, Cl. 33-374.000.

Moorehead, Harvey Robert; and Reading, George R., to Desert Pharmaceutical Company, Inc. Catheter placement unit with pressure closure. 3,811,440, Cl. 128-214.400.

Morehouse, James O.: *See—*
Shumaker, John F.; and Morehouse, James O., 3,811,582.

Moret, Michel A. Device for operating a pump so as to produce therefrom a pulsating jet of liquid. 3,811,432, Cl. 128-66.000.

Moreton, Derek Vidion. International Computers Limited Visual display device. 3,812,485, Cl. 340-324.00a.

Morfit, Oliver; and Ditman, John G., to Foster Wheeler Corporation. Solvent deasphalting. 3,811,843, Cl. 23-270.500.

Morgan, David C.: *See—*
Bieler, Barrie H.; Morgan, David C.; and Guebert, Kenneth W., 3,811,870.

Morgan, Donald F., to American Esna Corporation. Bowling ball indicia display means and method of assemblying same. 3,811,211, Cl. 40-2.200.

Morgan, Johnathan D.; and Ramsey, Roy A., to Phillips Petroleum Company. Regeneration of cobalt-molybdenum catalyst used for the removal of diolefins and acetylenes from an olefinic feed. 3,812,057, Cl. 252-416.000.

Morgenthaler, Frederic R., to Massachusetts Institute of Technology. Article for processing electromagnetic wave energy. 3,811,941, Cl. 117-234.000.

Mori, Kazuo: *See—*
Ishizumi, Kikuo; Mori, Kazuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,102.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.

Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,811,343, Cl. 74-759.000.

Moriarty, Maurice J. Seal. 3,811,690, Cl. 277-193.000.

Morikawa, Naotake: *See—*
Saito, Tomoo; Morikawa, Naotake; and Watanabe, Kazuo, 3,811,838.

Morooka, Shigeaki: *See—*
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,118.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.

Morrell, Albert Maxwell; and Van Hekken, Frans, to RCA Corporation. Correcting lens. 3,811,754, Cl. 350-189.000.

Morris, Joe P.: *See—*
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., 3,811,936.

Morrisett, O. L.; and Baker, Eugene E., to Halliburton Company. Dual sleeve multiple stage cementer and its method of use in cementing oil and gas well casing. 3,811,500, Cl. 166-154.000.

Morrison, David J., to Schering Corporation. Automated system and method for filling containers with viscous materials. 3,811,483, Cl. 141-1.000.

Morse, Charles P., to Rockwell International Corporation. Solid propellants containing reinforcing filament and process of making. 3,811,358, Cl. 86-20.00r.

Morse, Glenn B. Belt guard. 3,811,340, Cl. 74-611.000.

Morton, Albert W. Urinary drainage catheter. 3,811,448, Cl. 128-349.00b.

Morton-Norwich Products, Inc.: *See—*
O'Connor, Donald J., 3,811,599.

Morzynski, Stanislaw. System for locking a hub of rotofynamic pump rotor on pump shaft. 3,811,716, Cl. 287-53.00r.

Mosterd, Jacob Hendrik. Device for closing a bag. 3,811,245, Cl. 53-124.00a.

Mote, Neil H.: *See—*
Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H., 3,811,769.

Motor Devices Corporation: *See—*
Amendolia, Pasquale J., 3,811,316.

Motorola, Inc.: *See—*
Clark, Lowell Eugene, 3,812,405.
Davis, William Fosom; and Pace, Wilson David, 3,812,521.
Gasparaitis, Bernard; and Maloney, Dennis J., 3,812,310.
Hilbert, Francis H., 3,812,525.
Ivas, Thomas W.; and Slavik, William H., 3,812,524.
Wilcox, Milton E., 3,812,387.

Moyer, Elmo Emerson: *See—*
Van Gilder, Burrows Corson; and Moyer, Elmo Emerson, 3,812,415.

Moyer, Ronald C., to Air Products and Chemicals, Inc. Polyfluorocycloakyl phosphates. 3,812,217, Cl. 260-924.000.

Muchnick, Fred B. Yarn bobbin support device. 3,811,636, Cl. 242-129.500.

Muchnick, Paul: *See—*
Gryctko, Carl E.; Muchnick, Paul; and Jaconette, Frank C., 3,812,400.

Muckelroy, William L. Ceramic inductor. 3,812,442, Cl. 336-83.000.

Mueller, Dieter: *See—*
Esser, Franz; Hanstein, Friedrich; Hosch, Ludwig; and Mueller, Dieter, 3,812,208.

Mueller Ernst, K.G., Firma: *See—*
Gebhardt, Otto R., 3,811,620.

Mueller, Hans-Karl; and Lumbeck, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Propionic acid coated silica as a food preservative. 3,812,269, Cl. 426-227.000.

Muesing, Lawrence: *See—*
Whitney, William G.; and Muesing, Lawrence, 3,811,136.

Mukherjee, Barid B.: *See—*
Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., 3,812,110.

Mukherjee, Joan M. W. Method of making lithographic master. 3,811,886, Cl. 96-33.000.

Muller, Hans. Culture-growing apparatus. 3,812,016, Cl. 195-139.000.

Muller, Hans Rudolf: *See—*
Suter, Hans; Zutter, Hans; and Muller, Hans Rudolf, 3,812,186.

Muller, Jean-Claude: *See—*
Hoegerle, Karl; Muller, Jean-Claude; Vogel, Christian; and Rumpf, Jurg, 3,812,168.

Mulvey, Dennis M.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,812,182.

Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, to Nissan Motor Company, Limited and Ikeda Bussan Company, Limited. Movable seat for a motor vehicle. 3,811,726, Cl. 297-341.000.

Muramatsu, Shigeru: *See*—
Ariyama, Kenzo; Muramatsu, Shigeru; and Namiki, Ryoichi, 3,811,821.

Murase, Yasuo; and Takeuchi, Shizuka, to Toyoda Automatic Loom Works, Ltd. Dual pressure relief valve system. 3,811,471, Cl. 137-596.130.

Murtha, John C.; and Ross, James A., Jr., to Westinghouse Electric Corporation. Programmable digital signal processor. 3,812,470, Cl. 340-172.500.

Murto, Robert A.; and Hostetler, Eldon, to Chore-Time Equipment, Inc. Poultry feeder. 3,811,412, Cl. 119-53.000.

Muskulus, Willi; and Kramer, Willi, to Balzer & Droll KG. Coil winding apparatus. 3,811,630, Cl. 242-7.110.

Musz, Andrew: *See*—
Earle, Paul Lewis; Musz, Andrew; and Vandervelden, Jan Josef Maria, 3,811,814.

Muth, Karl: *See*—
Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,812,185.

Myer, Gary D., to Hughes Aircraft Company. Self-illuminated liquid crystal display panel. 3,811,751, Cl. 350-160.01c.

Naarden International N.V.: *See*—
De Rijke, David; and Boelens, Harmannus, 3,812,059.

Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, to Matsushita Electric Industrial Co., Ltd. Taken-up tape quantity indicating system. 3,811,640, Cl. 242-191.000.

Nagashima, Kazuo; and Ono, Tadahiro, to Toshiba Machine Co., Ltd. Method and apparatus for controlling the accuracy of machining of a machine tool. 3,811,228, Cl. 51-49.000.

Nagatomi, Makoto; Isogawa, Takayuki; Onodera, Nobuo; and Ishikawa, Nobuo, to Hodogaya Chemical Co., Ltd. Diphenyl ether herbicidal compositions. 3,811,864, Cl. 71-124.000.

Nakai, Yasuo: *See*—
Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo, 3,811,884.

Nakajima, Tohru; and Marui, Masatoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with automatic exposure controls. 3,812,497, Cl. 354-28.000.

Nakajima, Yosuke: *See*—
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, 3,811,889.

Nakamoto, Hideo: *See*—
Kimura, Tadasu; Kobayashi, Juichi; and Nakamoto, Hideo, 3,812,063.

Nakamura, Akira; Arai, Hiroshi; and Ohta, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake system with skid control. 3,811,739, Cl. 303-21.0be.

Nakamura, Harutoki, to Matsushita Electric Industrial Co., Ltd. Vehicle exhaust control equipment. 3,811,845, Cl. 23-288.00f.

Nakamura, Hitoshi: *See*—
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.

Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, to Tokyo Shibaura Electric Co., Ltd. Silicon double doped with P and As or B and As. 3,812,519, Cl. 357-38.000.

Nakatani, Hiroshi: *See*—
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.

Nakayama, Takao: *See*—
Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo, 3,811,884.

Namiki, Ryoichi: *See*—
Ariyama, Kenzo; Muramatsu, Shigeru; and Namiki, Ryoichi, 3,811,821.

Napolitano, Michael: *See*—
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,811,493.

Narahara, Hisaaki, to Sony Corporation. System for magnetically recording and reproducing television signals. 3,812,523, Cl. 358-4.000.

Narayanan, Venkatachlal L.: *See*—
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., 3,812,092.

Nasser, Benny E., Jr., to Phillips Petroleum Company. Activation of olefin polymerization catalysts. 3,812,058, Cl. 252-458.000.

National Cash Register Company, The: *See*—
de la Torriente, Leandro J.; and Crainich, Victor A., Jr., 3,812,056.
Farber, Sheldon; and Wright, Arthur J., 3,812,146.
Lin, Chao-Han; and Wright, Arthur J., 3,812,157.
Tink, Robert MacMillan; and Baker, Bob Jim, 3,812,292.
Yamanaka, Izumi; Sato, Hironobu; and Takeuchi, Yoshihiro, 3,811,615.

National Lead Company: *See*—
Happel, John; and Umemura, Sumio, 3,812,175.

National Research Development Corporation: *See*—
Briggs, Philip Stanley, 3,811,832.

Natta, Giulio; Beati, Enrico; Severini, Febo; and Toffano, Silvio, to Montecatini Edison S.p.A. Polymeric composition comprising polyvinyl chloride. 3,812,204, Cl. 260-878.00r.

Neale, Robert E.; Wilhelmsen, Paul C.; and Winterhalter, David R., to Berkeley Applied Research Corporation. Folding puzzle. 3,811,682, Cl. 273-155.000.

Nedvich, Richard J.: *See*—
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.

Needham, Victor; and Bowen, Brian Francis, to Lucas, Joseph, (Industries) Limited. Method of producing electric wiring arrangement. 3,812,019, Cl. 204-15.000.

Neelan, Gregorius Theodorus Maria: *See*—
Meijer, Roelf Jan; Neelan, Gregorius Theodorus Maria; and Vree, Jules Herman, 3,811,497.

Neff, Frederick R. Stop motion converter. 3,811,548, Cl. 198-19.000.

Neikam, William C.; and James, Robert L., to Sun Research and Development Company. Production of nitriles by ammoxidation. 3,812,171, Cl. 260-465.00c.

Nellis, David C.: *See*—
Wirtz, John S.; and Nellis, David C., 3,812,372.

Nelmor Co. Inc.: *See*—
Person, Irving T., 3,811,568.

Nelson, Lowell F., to Enterprise Brass Works. Shut-off valve assembly with condition responsive trip means. 3,811,456, Cl. 137-39.000.

Nelson, Ted, Company: *See*—
Beasley, Robert W., 3,811,646.

Nesteruk, Edward P. Method of applying a hot luster coating to glass by electrostatic means. 3,811,925, Cl. 117-93.40r.

New England Nuclear Corporation: *See*—
Novitch, Howard, 3,811,591.

Newton, Richard C., to Phillips Petroleum Company. Non-twisted, heather yarn and method for producing same. 3,811,263, Cl. 57-140.00r.

Nichicon Capacitor, Limited: *See*—
Nose, Kiyoo; Kokura, Yoshiji; Hizaki, Nobuo; and Nishikawa, Shigeydshi, 3,812,407.

Nichols, Gus, to General Electric Company. Polyanhydrides useful as flexibilizing curing agents for epoxy resins. 3,812,064, Cl. 260-18.0ep.

Niebylski, Leonard M.; and Brendel, Gottfried J., to Ethyl Corporation. Process for making a lithium doped beryllium hydride composite. 3,811,972, Cl. 149-109.000.

Nieder-Vahrenholz, Hans Georg: *See*—
Schafer, Heinrich; and Nieder-Vahrenholz, Hans Georg, 3,812,234.

Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Sensor and method of manufacture. 3,811,184, Cl. 29-592.000.

Nier, Thomas J.: *See*—
Ernsberger, Fred M.; and Nier, Thomas J., 3,811,858.

Nier, Thomas J., to PPG Industries, Inc. Processing of stirring molten glass with bubbles from electrolysis. 3,811,860, Cl. 65-135.000.

Nilsson, Sven Walter, to SKF Industrial Trading and Development Company NV. Means for interconnecting two machine elements. 3,811,784, Cl. 403-2.000.

Nippon Automation Co., Ltd.: *See*—
Sakamoto, Michio; and Tanaka, Masao, 3,812,441.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Tomisawa, Norio; Amano, Takehisa; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,812,478.

Nippon Kakoh Seishi K.K.: *See*—
Katagiri, Keizo; Sakaguchi, Namoru; and Kamata, Tokumaro, 3,812,005.

Nippon Kokan Kabushiki Kaisha: *See*—
Hosoe, Toshiaki; Okami, Yuji; Michishita, Katsumi; and Fukuda, Shuzo, 3,812,373.

Nippon Oil Company, Limited: *See*—
Sato, Hisatake; and Hayashi, Hiedo, 3,812,216.

Nippon Paint Co., Ltd.: *See*—
Takimoto, Yasuyuki; and Yoshikawa, Toshikazu, 3,812,078.

Nippon Piston Ring Co., Ltd.: *See*—
Sugahara, Eisuke, 3,811,691.

Nischk, Gunther: *See*—
Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,812,085.

Nishikawa, Shigeydshi: *See*—
Nose, Kiyoo; Kokura, Yoshiji; Hizaki, Nobuo; and Nishikawa, Shigeydshi, 3,812,407.

Nishio, Daijiro: *See*—
Sato, Hiroshi; Nishio, Daijiro; and Takahashi, Takeshi, 3,812,145.

Nissan Motor Company, Limited: *See*—
Kurasawa, Yoshiya; and Otani, Syuichi, 3,811,702.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,811,343.
Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, 3,811,726.

Nitsch, Ernst, to Laevosan-Gesellschaft Chem.-Pharm. Industrie Franck & Dr. Freudl. Method of producing fructose and glucose from sucrose. 3,812,010, Cl. 195-31.00f.

Niwa, Shinichi, to Sanyo Electric Co., Ltd. Electrolyte for electrolytic capacitor. 3,812,039, Cl. 252-62.200.

Noetzel, Siegfried: *See*—

Merkle, Kurt; Fuchs, Otto; Troster, Helmut; and Noetzel, Siegfried, 3,812,051.

Noetzel, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Daylight fluorescent pigments and process for preparing same. 3,812,053, Cl. 252-301.20r.

Noetzel, Siegfried; and Fischer, Edgar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Daylight fluorescent pigments and process for preparing them. 3,812,054, Cl. 252-301.20r.

Nomura, Takayuki. Box-shaped guide bushing and driving control unit for cutting tools for head stock moving type screw machines encasing cutting tool driving system. 3,811,346, Cl. 82-25.000.

Nonaka, Masahide: *See—*
Weaver, Merle L.; Hautala, Earl; and Nonaka, Masahide, 3,812,274.

Nonken, Gordon C., to General Electric Company. High power electrical bushing having a vacuum switch encapsulated therein. 3,812,314, Cl. 200-144.00b.

Noothout, Arend Jaman; Kanij, Johannes Bastiaan Willem; and Votocek, Otakar, to Reactor Centrum Nederland. Precipitation delaying process employing a synergistic mixture of complexing agents. 3,812,049, Cl. 252-301.10s.

Nordson Corporation: *See—*
Baker, Robert G.; and Reighard, Alan B., 3,811,405.
Reighard, Alan B.; and Tamny, Simon Z., 3,811,601.

Nordstrom, Knut Lennart. Method and apparatus for cold drawing or rolling of metal wire rod. 3,811,309, Cl. 72-235.000.

North American Philips Corporation: *See—*
Crowell, Merton H., 3,812,396.

North American Rockwell Corporation: *See—*
Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., 3,811,974.

Nose, Kiyoo; Kokura, Yoshiji; Hizaki, Nobuo; and Nishikawa, Shigeydshi, to Nichicon Capacitor, Limited. Capacitor. 3,812,407, Cl. 317-258.000.

Nouel, Jean-Paul, to U.S. Philips Corporation. Method of producing a carrier for a scintigraphic preparation and scintigraphic preparations including said carrier. 3,812,264, Cl. 424-1.000.

Nova Hut Klementa Gottwalda narodni podnik: *See—*
Stefek, Oldrich; Triska, Vojtech; and Bednar, Ladislav, 3,811,310.

Novak, Joseph F. Dual action triggering valve device for inflatable equipment. 3,811,461, Cl. 137-318.000.

Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,812,136.

Novitch, Howard, to New England Nuclear Corporation. Dually sealable, non-leaking vial for shipping radioactive materials. 3,811,591, Cl. 215-12.00r.

Nozik, Arthur Jack, to American Cyanamid Company. Light-transmitting electrically conducting cadmium stannate and methods of producing same. 3,811,953, Cl. 136-89.000.

Nupro Company: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.

Oaks, William D.: *See—*
Leinkram, Charles Z.; and Oaks, William D., 3,811,181.

O'Bara, Edward John: *See—*
Starer, Ira; Montgomery, Carroll Sherman; and O'Bara, Edward John, 3,812,194.

Obenshain, George R.: *See—*
Yakubek, Louis P.; and Obenshain, George R., 3,811,862.

Oblasti, Dolgoprudny Moskovskoi: *See—*
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.

O'Brien, John R. Saddle hanger. 3,811,574, Cl. 211-13.000.

Occidental Energy Development Company: *See—*
Creutz, Hans-Gerhard; Romanowski, Edward A.; and Symons, Philip C., 3,811,946.

Occidental Petroleum Corporation: *See—*
Grannen, Edward A., 3,812,238.

O'Connor, Donald J., to Morton-Norwich Products, Inc. Two-pack combination container and tablet dispenser. 3,811,599, Cl. 221-265.000.

O'Day, Peter Joseph: *See—*
Lesh, Nathan George; O'Day, Peter Joseph; and Unger, Burton Abram, 3,811,973.

Oertel, Gunter: *See—*
Braden, Rudolf; Hendricks, Udo; Oertel, Gunter; and Schliebs, Reinhard, 3,812,221.

Oexler, Rudolf: *See—*
Bystron, Bruno; Grimm, Eberhard; and Oexler, Rudolf, 3,811,256.

Offshore Company, The: *See—*
Swenson, William J., 3,811,322.

Ogiso, Matsutoshi: *See—*
Aizawa, Hiroshi; and Ogiso, Matsutoshi, 3,812,510.

Ogiso, Mitsutoshi: *See—*
Matsubs, Mutsuhide; Ogiso, Mitsutoshi; and Yazaki, Mutsunobu, 3,812,508.

Ohashi, Yoshihiko: *See—*
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, 3,812,134.

Ohayon, Gabriel, to Rhone-Poulenc Textile. Device for the production of false twisted yarns. 3,811,260, Cl. 57-77.300.

Ohi, Reiichi: *See—*
Okutsu, Toshimitsu; Tsuji, Nobuo; Ohi, Reiichi; and Kondo, Tokiharu, 3,812,079.

Ohki, Eiji: *See—*
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, 3,812,134.

Ohmayer, Siegfried: *See—*
Knapp, Wilhelm; and Ohmayer, Siegfried, 3,811,540.

Ohringer, Jack G. Slit diaphragm valve. 3,811,466, Cl. 137-493.000.

Ohta, Jun: *See—*
Nakamura, Akira; Arai, Hiroshi; and Ohta, Jun, 3,811,739.

Ohta, Noboru; Oishi, Yasushi; and Ueda, Hirozo, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 3,811,890, Cl. 96-74.000.

Ohta, Wasaburo; Kasuya, Kazuhiko; Fujimoto, Sakae; and Yamauchi, Masayuki, to Ricoh Co., Ltd. Process and device for heating and fixing an image upon a recording medium. 3,811,828, Cl. 432-227.000.

Ohtsuka, Kunio: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,811,343.

Ohtsuki, Takashi: *See—*
Tomita, Akio; Karitani, Tadakazu; and Ohtsuki, Takashi, 3,811,567.

Oida, Sadao: *See—*
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, 3,812,134.

Oishi, Yasushi: *See—*
Ohta, Noboru; Oishi, Yasushi; and Ueda, Hirozo, 3,811,890.

Ojihara, Motohiro: *See—*
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, 3,811,889.

Oka, Yutaka: *See—*
Inoue, Eiichi; Nakayama, Takao; Oka, Yutaka; and Nakai, Yasuo, 3,811,884.

Okada, Shigetaka; and Tsuyama, Naoto, to Hayashibara Biochemical Laboratories, Incorporated. Method of converting starch to β-cyclodextrin. 3,812,011, Cl. 195-31.00r.

Okami, Yuji: *See—*
Hosoe, Toshiaki; Okami, Yuji; Michishita, Katsumi; and Fukuda, Shuzo, 3,812,373.

Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Pyrroloindole and pyridoindole derivatives. 3,812,135, Cl. 260-293.550.

Okano, Keisuke: *See—*
Izura, Yoshiteru; and Okano, Keisuke, 3,812,522.

Okazaki, Nobuo: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,811,343.

Okimoto, Ken-Ichi: *See—*
Inaba, Shin-Ichi; Okimoto, Ken-Ichi; Tamura, Setsuo; and Uenaka, Toshiyuki, 3,811,868.

Okumura, Takatoshi: *See—*
Tomisawa, Norio; Amano, Takehisa; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,812,478.

Okutsu, Toshimitsu; Tsuji, Nobuo; Ohi, Reiichi; and Kondo, Tokiharu, to Fuji Photo Film Co., Ltd. Stabilized linear polyesters. 3,812,079, Cl. 260-45.80a.

Olin Corporation: *See—*
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., 3,811,874.
Hammond, Philip D.; and Scott, John A., 3,812,169.

Olina, Inese Petrowna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

Olney, Henry L. Bobbin retainer attachment for a thread carrying spool. 3,811,608, Cl. 223-106.000.

Olsen, John H., to Flow Research, Inc. High pressure fluid intensifier and method. 3,811,795, Cl. 417-53.000.

Olson, Donald R., to United States of America. Chemical heater tube. 3,811,422, Cl. 126-263.000.

Ondetti, Miguel A.: *See—*
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., 3,812,092.

Ondetti, Miguel A., to Squibb, E. R., & Sons, Inc. D-analogs of secretin. 3,812,091, Cl. 260-112.500.

O'Neil, Robert Anthony: *See—*
Artwick, Kert Edward; and O'Neil, Robert Anthony, 3,811,523.

Ono, Tadahiro: *See—*
Nagashima, Kazuo; and Ono, Tadahiro, 3,811,228.

Onodera, Nobuo: *See—*
Nagatomi, Makoto; Isogawa, Takayuki; Onodera, Nobuo; and Ishikawa, Nobuo, 3,811,864.

Onoki, Fumio; and Kamiya, Hajime, to Hoya Lens Co., Ltd. Coated optical component made of plastic. 3,811,753, Cl. 350-175.0ng.

Onore, Michael J.: *See—*
Higdon, Buster W.; Hobbs, Charles C.; and Onore, Michael J., 3,812,210.

Ontario Research Foundation: *See—*
Ladell, John L., 3,811,865.

Optical Business Machines, Inc.: *See*—
MacNeill, John H.; and Willey, Ronald R., 3,812,459.
Orlando, Harold J.: *See*—
Flogaus, William S.; Graves, Howard T.; Orlando, Harold J.; and Van Der Laske, Dennis P., 3,812,357.
Osbond, John Mervyn; and Fothergill, Graham Alwyn, to Hoffmann-La Roche Inc. N-Phenylpropylene substituted tetrahydroisoquinolines. 3,812,133, Cl. 260-289.00r.
Ostapiak, Roman; and Scuderi, Rudolph, to Bell Telephone Laboratories, Incorporated. Pulse width stabilized blocking oscillator. 3,812,435, Cl. 331-112.000.
Ostberg, Bengt Sven Erik, to Kamyr Aktiebolag. Method of continuous cellulose digestion and digester adapted for performing the method. 3,811,994, Cl. 162-19.000.
Oster Corporation: *See*—
Bowerman, Leonard E., 3,812,389.
Osterkorn, Charles Louis; Buck, Leo V.; Kloos, William W.; and Marino, Salvatore M., to Fedders Corporation. Heating element assembly. 3,812,322, Cl. 219-532.000.
Ostrowski, Edwin A.: *See*—
Kozel, James A.; and Ostrowski, Edwin A., 3,812,398.
Oswitch, Stanley; and Kipp, Kevin K., to Ferro Corporation. Prefabricated gel coats. 3,812,074, Cl. 260-31.870.
Otani, Syuichi: *See*—
Kurasawa, Yoshiya; and Otani, Syuichi, 3,811,702.
Otterstedt, Jan-Erik Anders; and Pater, Richard, to Du Pont de Nemours, E. I., and Company. U.V.-absorbing ortho-hydroxyphenyl substituted phenanthrolines. 3,812,123, Cl. 260-288.00p.
Otto, William F.: *See*—
Honeycutt, Thomas E.; Otto, William F.; and Cason, Charles M., III, 3,811,774.
Owens-Illinois, Inc.: *See*—
Crawford, James E.; and Russell, Richard H., 3,811,921.
Levene, Leon, 3,811,918.
Riggs, Darius O., 3,811,553.
Semersky, Frank E., 3,812,009.
Yakubek, Louis P.; and Obenshain, George R., 3,811,862.
Oy Airam Ab: *See*—
Hakka, Lennart, 3,811,877.
Oy Cyklop AB: *See*—
Back, Karl Johan, 3,811,481.
Back, Karl Johan; and Walhelm, Ragnar Ilmari Olof, 3,811,482.
Pace, Wilson David: *See*—
Davis, William Fosom; and Pace, Wilson David, 3,812,521.
Padgett, Richard A., to GTE Automatic Electric Laboratories, Incorporated. Arrangement for providing priority override of billing buffer entry selector. 3,812,293, Cl. 179-7.00r.
Page, Stewart E., to Kona Boats. Water ski holder. 3,811,143, Cl. 9-310.00r.
Pahk, Ung Soo. Germanium derivative. 3,812,167, Cl. 260-429.00r.
Palmer, Reed Albert: *See*—
Faffaelli, Joseph Gino; and Palmer, Reed Albert, 3,812,324.
Pankove, Jacques Isaac: *See*—
Hawrylo, Frank Zygmunt; and Pankove, Jacques Isaac, 3,811,963.
Paraskevakos Electronics & Communication, Inc.: *See*—
Paraskevakos, Theodore G., 3,812,296.
Paraskevakos, Theodore G., to Paraskevakos Electronics & Communication, Inc. Apparatus for generating and transmitting digital information. 3,812,296, Cl. 179-18.00b.
Parmenter, George Shearer, to Solartron Electronic Group Limited, The. Scanner with reed relays. 3,812,439, Cl. 335-151.000.
Parrochia, Maxime. Garment bag. 3,811,543, Cl. 190-43.000.
Parry, Philip James; and Twigg, Peter Lindsay, to International Nickel Company, Inc., The. Process of producing nickel chromium alloy products. 3,811,960, Cl. 148-11.50f.
Pascente, Joseph E., to Grigsby-Barton, Inc. Synchronous switching circuit. 3,812,382, Cl. 307-133.000.
Pater, Richard: *See*—
Otterstedt, Jan-Erik Anders; and Pater, Richard, 3,812,123.
Paulucci, Jeno F., to Jeno's Inc. Unitary container for a food product. 3,811,594, Cl. 220-20.000.
Pavlushkin, Nikolai Mikheevich: *See*—
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.
Peabody Engineering Corporation: *See*—
Arnold, Orlan M.; and Vancini, Carlo A., 3,811,249.
Pearce, Jai K.: *See*—
Schempp, Eberhard G.; and Pearce, Jai K., 3,812,275.
Pearson, Raymond H., to Whitehall Electronics Corporation. Marine seismic streamer connector structure. 3,812,455, Cl. 340-7.00r.
Pecoraro, George A. Method of making float glass. 3,811,854, Cl. 65-27.000.
Pedersen, Thomas Josef, to Bell Telephone Laboratories, Incorporated. Bilateral time division multiplex switching system. 3,812,294, Cl. 179-15.0ag.
Peis, Gunter. Device for cleaning soles of shoes. 3,811,207, Cl. 36-2.5al.
Penn, Paul E.; and Waymire, John, to Dart Controls, Inc. Trash masher motor control. 3,812,408, Cl. 318-282.000.
Pennsylvania Engineering Corporation: *See*—
Schempp, Eberhard G.; and Pearce, Jai K., 3,812,275.
Pennwalt Corporation: *See*—
MacLeay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, 3,812,094.
Sheppard, Chester Stephen; MacLeay, Ronald Edward; and Basford, Richard Anthony, 3,812,095.
Penumo Dynamics Corporation: *See*—
Maurer, James Herbert, 3,811,958.
Perkin-Elmer Corporation, The: *See*—
Kerr, Edwin L., 3,811,782.
Perronnet, Jacques: *See*—
Bertin, Daniel; Perronnet, Jacques; and Teche, Andre, 3,811,863.
Perroud, Paul: *See*—
Bertrand, Gerard; Perroud, Paul; and Sylvestre-Baron, Martial, 3,812,026.
Perry, Elmer L. Liquid dispensing device. 3,811,604, Cl. 222-429.000.
Persicke, Gunter, to Christiani and Nielsen Limited. Fluid operated jacks. 3,811,653, Cl. 254-29.00a.
Person, Irving T., to Nelmor Co. Inc. Parts separators. 3,811,568, Cl. 209-99.000.
Personnaz, Leon Felix: *See*—
Soliman, Georges; and Personnaz, Leon Felix, 3,812,460.
Peschl, Ervin; Zmatlik, Josef; Sedlecky, Jaromir; and Kolar, Vladimir, to Statni vyzkumny ustav textilni. Two part knitting needle. 3,811,299, Cl. 66-120.000.
Pestka, John August: *See*—
Lindeman, Richard Jay; and Pestka, John August, 3,811,154.
Peters, Henning, to Uhde, Friedrich, GmbH. Process for performing gas-phase reactions under pressure. 3,812,090, Cl. 260-94.90r.
Petersen, Philip R. Guide means for two for one twisting device. 3,811,259, Cl. 57-58.830.
Petrella, Ronald V.: *See*—
Schmidt, Donald L.; Daniels, Arthur L.; and Petrella, Ronald V., 3,812,244.
Petrik, Albert V. Method and apparatus for cleaning. 3,811,227, Cl. 51-16.000.
Petro-Tex Chemical Corporation: *See*—
Besozzi, Alfio J.; Cooley, Stone D.; and Potts, Fred E., III, 3,812,158.
Petrolite Corporation: *See*—
Jarvis, Howell R.; and Cole, Ernest A., Jr., 3,812,027.
Petrovich, John P.; and Tyssee, Donald A., to Monsanto Company. Conversion of acrolein dimer to cyclopentanone. 3,812,190, Cl. 260-586.00a.
Peyser, Harry A.: *See*—
Frankenberg, Henry E.; and Peyser, Harry A., 3,811,597.
Pfeiffer, Heinrich; Kolb, Karl Heinz; Harwart, Alois; and Schulze, Paul E., to Schering Aktiengesellschaft. β-(2,4,6-Triiodo-3-acetamidinophenyl)-propionic acids. 3,812,151, Cl. 260-326.470.
Pfizer Inc.: *See*—
Cronin, Timothy H.; and Hess, Hans-Jurgen E., 3,812,127.
Philco-Ford Corporation: *See*—
Fassell, Wayne M., 3,811,900.
Flynn, James P., 3,811,293.
Phillipps, Patrick G.: *See*—
Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., 3,811,428.
Phillips, Peter: *See*—
Gartner, Klaus W.; and Phillips, Peter, 3,811,618.
Phillips Petroleum Company: *See*—
Clay, Harris A., 3,812,030.
Eddy, William R., 3,811,551.
Morgan, Johnathan D.; and Ramsey, Roy A., 3,812,057.
Nasser, Benny E., Jr., 3,812,058.
Newton, Richard C., 3,811,263.
Phimister, Thomas H.: *See*—
Gordon, Douglas M.; and Phimister, Thomas H., 3,811,365.
Photo-Motion Corporation: *See*—
Eaves, Robert B., 3,811,213.
Piccolo, Luigi; Calcagno, Benedetto; and Ghirga, Marcello, to Societa Italiana Resine S.I.R., S.p.A. Process for the manufacture of titanium dioxide pigments. 3,811,908, Cl. 106-300.000.
Piccolo, Luigi; Ghirga, Marcello; and Calcagno, Benedetto, to Societa Italiana Resine S.I.R. S.p.A. Process for preparing aluminum trichloride. 3,812,241, Cl. 423-495.000.
Pierburg, A., Auto- und Luftfahrt-Geratebau KG: *See*—
Frohberg, Gunther, 3,811,803.
Pierson, Joseph E.: *See*—
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.
Pietroni, Piero, to Technofil S.p.A. Drawing-pulley group for a wire-drawing machine for thin metal wires. 3,811,312, Cl. 72-278.000.
Pines, Seemon H.: *See*—
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,812,187.
Pink, Frank A., to Ford Motor Company. Venting of electroform reflex inserts by laser drill. 3,811,647, Cl. 249-160.000.
Pink, Frank A., to Ford Motor Company. Electrical heating bands for a feeding system. 3,812,323, Cl. 219-535.000.
Pintard, Frederick Bruce, to Johns-Manville Corporation. Corner adaptors for expansion joints. 3,811,714, Cl. 285-229.000.
Pipe Specialties, Inc.: *See*—
Dula, Alfred A.; and Wehring, Elwood, 3,811,710.
Piquerez, Ervin, S.A.: *See*—
Piquerez, Pierre Michel, 3,811,401.

Piquerez, Pierre Michel, to Piquerez, Ervin, S.A. Sealed evacuated and pressurized watch cases. 3,811,401, Cl. 116-70.000.
Pissiotas, Georg: *See—*
Martin, Henry; and Pissiotas, Georg, 3,812,260.
Pitney-Bowes, Inc.: *See—*
Lupkas, Raymond R.; and Grimaldi, Dominick L., 3,811,407.
Montillier, Jean-Pierre, 3,811,879.
Tramposch, Herbert, 3,812,328.
Pitzele, Barnett S.: *See—*
Baran, John S.; and Pitzele, Barnett S., 3,812,097.
Pitzler, Mary Ann. Sensorial counting board. 3,811,205, Cl. 35-32.000.
Pizzo, Gustano A. Anti hijacking system for aircraft. 3,811,643, Cl. 244-137.00p.
Plastic Container Corporation: *See—*
Hall, Samuel, Jr., 3,811,590.
Plastic Molders Supply Co., Inc.: *See—*
Bradbury, William B.; and Rothschmitt, Anton J., 3,811,627.
Plastics, Inc.: *See—*
Bateman, Robert F., 3,811,566.
Eckdahl, Thomas H.; and Bateman, Robert F., 3,811,595.
Schilling, Paul K.; and Eckdahl, Thomas H., 3,811,560.
Platt, Richard O., to Dresser Industries, Inc. Weighed charge system for a brick press. 3,811,808, Cl. 425-167.000.
Platter, Sandford: *See—*
Wesson, Richard A.; and Platter, Sandford, 3,811,829.
Plempel, Manfred: *See—*
Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,812,142.
Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Ballu, Louis, 3,811,285.
Podlas, Thomas J., to Hercules Incorporated. Control of polymer degradation rate. 3,811,902, Cl. 106-169.000.
Pohl, Dieter, to Siemens Aktiengesellschaft. Electrical insulator having additional protective insulating portion. 3,812,284, Cl. 174-188.000.
Polaroid Corporation: *See—*
Bader, Henry; and Chiang, Yunn H., 3,812,115.
Bader, Henry; Feingold, Michael; and Jahngen, Edwin G., Jr., 3,812,191.
Cook, Gerald H., 3,812,515.
Simon, Myron S., 3,811,881.
Polk, Edgwin R., to SKF Kugellagerfabriken GmbH. Three-dimensional composite tiles for use as wall coverings. 3,811,996, Cl. 161-44.000.
Polymer Corporation Limited: *See—*
Clark, Roy; and Westfield, Donald, 3,811,922.
Polysar Limited-Polysar Limitee: *See—*
Smith, Albert Ernest; and Ingram, James Charles, 3,812,224.
Ponghis, Nicholas Gerassimo; and Poos, Arthur Gerard, to Centre National de Recherches Metallurgiques. Process for the reduction of iron ores. 3,811,869, Cl. 75-42.000.
Pont, Dominique; Lafont, Andre; and Voisin, Alain, to Societe d'Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M. Air-cushion vehicles. 3,811,527, Cl. 180-121.000.
Poos, Arthur Gerard: *See—*
Ponghis, Nicholas Gerassimo; and Poos, Arthur Gerard, 3,811,869.
Pormale, Milda Yanovna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.
Porrmann, Herbert: *See—*
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, 3,811,923.
Porter, David Charles, to Integrated Photomatrix Limited. Pulse charge to voltage converter. 3,812,386, Cl. 307-261.000.
Porter, John A. Low pressure paint spray apparatus for conveyor carried articles. 3,811,409, Cl. 188-314.000.
Possati, Mario. Measurement instrument with device for indicating the limits of tolerance. 3,811,404, Cl. 116-129.00r.
Postma, Lambertus: *See—*
Jannssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendirk; Postma, Lambertus; and Vondeling, Jacob Klass, 3,811,893.
Potts, Fred E., III: *See—*
Besozzi, Alfio J.; Cooley, Stone D.; and Potts, Fred E., III, 3,812,158.
Potts, Larry D.: *See—*
Boston, Ray W., Jr.; and Potts, Larry D., 3,811,370.
Poupitch, Ouglesa Jules, to Illinois Tool Works, Inc. Container carrier. 3,811,561, Cl. 206-161.000.
Povilaitus, Frank R.: *See—*
Andersen, Poul H.; Povilaitus, Frank R.; and Himes, Robert S., 3,812,312.
Powell, John Dillard, to Continental Homes, Incorporated. Prefabricated multi-story structure. 3,811,235, Cl. 52-69.000.
Powelson, Lilliam E.: *See—*
Moore, Romayne T.; and Powelson, Lilliam E., 3,811,197.
PPG Industries Inc.: *See—*
Ernsberger, Fred M.; and Nier, Thomas J., 3,811,858.
Ernsberger, Fred M., 3,811,859.
McConnell, William C., 3,812,254.
Nier, Thomas J., 3,811,860.
Stack, Roy E., 3,812,086.
Swaney, Larry R., 3,812,239.
Prag, Rudolf; and Dierker, Joachim, to Siemens Aktiengesellschaft. Process and apparatus for visualizing gamma ray images. 3,812,361, Cl. 250-370.000.
Prather, Alfred G. B. Collapsible propeller for man-powered glider aircraft. 3,811,642, Cl. 244-16.000.
Prave, Paul: *See—*
Buschmann, Lothar; Prave, Paul; and Sukatsch, Dieter, 3,812,012.
Precision Metalsmiths, Inc.: *See—*
Daskivich, Michael, 3,811,903.
Precision Processes (Textiles) Limited: *See—*
Gallup, Raymond Charles; and Riley, Richard Edward, 3,811,835.
Preisig, Roland, to Bobst, J., & Fils, S.A. Apparatus for handling a flow of boxes. 3,811,549, Cl. 198-21.000.
Press, Irving D.; Rink, Helm A.; and Menzel, John K., to Resistoflex Corporation. Constrictable tube valve with plural wall. 3,811,649, Cl. 251-8.000.
Preusser, Joe R. Vehicle brake. 3,811,535, Cl. 188-29.000.
Previte, Robert W.; and Chin, David, to Grace, W. R., & Co. Method of adding small amounts of solid particulate admixtures to hydraulic cement compositions. 3,812,076, Cl. 260-37.0al.
Price, Paul B.: *See—*
Fleischer, Robert L.; and Price, Paul B., 3,811,999.
Priebe, Frank D., to Cities Service Oil Company. Well drilling method. 3,811,509, Cl. 166-293.000.
Primary Childrens Hospital: *See—*
Clark, Justin S., 3,812,482.
Pritchard, J. F., and Company: *See—*
Landrum, Leslie H.; and Huppe, Robert L., 3,812,243.
Procter & Gamble Company, The: *See—*
Connor, Daniel S.; and Krummel, Harry Karl, 3,812,044.
Procter, James C. Humidifying apparatus. 3,811,661, Cl. 261-26.000.
Prost, Roger, to Lucien International. Determination of ornithine-carbamyl-transferase. 3,812,015, Cl. 195-103.50r.
Protective Plastics Limited: *See—*
Fiddes, Derek Edward, 3,811,236.
Prudnikov, Evgeny Leonidovich: *See—*
Frenkel, Shiman Tevelievich; Skripko, Gely Fomich; Golub, Georg Froimovich; Prudnikov, Evgeny Leonidovich; and Ganelin, Naum Borisovich, 3,811,520.
Pryor, Michael J.: *See—*
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., 3,811,874.
Pullman Incorporated: *See—*
Vornberger, George F., 3,811,729.
Pulskamp, Gerald Steven, to Crown Controls Corporation. Multi-function controller. 3,811,336, Cl. 74-471.0xy.
Purchase, F. Jack, to Antolelic Industries, Ltd. Display having a photoconductor gas discharge control. 3,812,486, Cl. 340-324.00m.
Purnell, Herbert L. Portable collapsible darkroom. 3,811,767, Cl. 355-27.000.
Putterman, Harry: *See—*
Witteles, Abraham A.; and Putterman, Harry, 3,812,479.
Quednau, Peter: *See—*
Katsimbas, Themistoklis; Dalibor, Horst; and Quednau, Peter, 3,812,067.
Quillevere, Herve Alain: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; Castellant, Jean-Pierre Jules Emile; and Lacroix, Armand Jean-Baptiste, 3,811,276.
Radin, Bernard G., to Ford Motor Company. Overtemperature protection system for exhaust gas conversion device. 3,812,401, Cl. 317-40.00r.
Radscheit, Kurt: *See—*
Stache, Ulrich; Radscheit, Kurt; Firtsch, Werner; and Haede, Werner, 3,812,106.
Rahn Paul, to Meyer, Roth & Pastor Machinenfabrik GmbH. Apparatus for forming chain-links. 3,811,268, Cl. 59-27.000.
Raimo, Anthony J.: *See—*
Gugliotta, George; and Raimo, Anthony J., 3,812,349.
Rakovsky, Vladimir Mikhailovich: *See—*
Zabolotsky, Grigory Mikhailovich; Rakovsky, Vladimir Mikhailovich; Shuster, Sergei Alexandrovich; and Boldyrev, Mikhail Vsevolodovich, 3,811,166.
Rakowsky, Edward L.: *See—*
Marchese, Vincent P.; and Rakowsky, Edward L., 3,811,359.
Ralston, Robert E.; and Ko, Yung Ling, to Mallory, P. R., & Co., Inc. High discharge rate mercury cell. 3,811,955, Cl. 136-107.000.
Ramaswamy, Vellayan, to Bell Telephone Laboratories, Incorporated. Method of making epitaxial film optical devices. 3,811,912, Cl. 117-33.300.
Ramsey, Robert E.: *See—*
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.
Ramsey, Roy A.: *See—*
Morgan, Johnathan D.; and Ramsey, Roy A., 3,812,057.
Ramuz, Henri: *See—*
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,812,129.
Ranatza, Samuel; and Linn, John C. Derailment actuated air brake control for trains. 3,812,344, Cl. 246-171.000.

Randell, Donald Richard; Miles, Peter; and Virgin, Allan Geoffrey, to Ciba-Geigy AG. Preparation of 3,3',5,5'-tetra-isopropyl-4,4'-hydroxydiphenyl. 3,812,193, Cl. 260-620.000.

Randell, Forrest Thomson, to Weir Pumps Limited. Rotodynamic fluid machines. 3,811,789, Cl. 415-1.000.

Ransomes Sims & Jefferies Limited: *See*—
Aldred, Edward John, 3,811,524.

Rapp, Willard Emanuel, to Western Electric Company, Incorporated. Tube radius measuring method and device. 3,811,193, Cl. 33-178.00r.

Rau, Gerald A.: *See*—
Sauey, Lawrence K.; Mason, Leroy W.; and Rau, Gerald A., 3,811,216.

Rauch, Francis Clyde; and Arzoumanidis, Gregory Gerasimos, to American Cyanamid Company. Catalytic production of aniline and other amines from carboxylic acids and ammonia. 3,812,137, Cl. 260-296.00r.

Rauterkus, Karl Josef: *See*—
Kuhlkamp, Alfred; Rauterkus, Karl Josef; Schaefer, Horst; and Seip, Detlev, 3,812,072.

RCA Corporation: *See*—
Avins, Jack, 3,812,289.
Carlson, David Emil; Hang, Warren Kenneth; and Stockdale, George Fairbank, 3,811,855.
Flory, Robert Earl, 3,812,528.
Grae, Bernard Aron; and Andrew, Dallas Roy, 3,812,537.
Hawrylo, Frank Zygmunt; and Pankove, Jacques Isaac, 3,811,963.
Marsh, James Courtland, Jr., 3,812,397.
Marx, Richard Everet, 3,812,437.
Morrell, Albert Maxwell; and Van Hekken, Frans, 3,811,754.
Scheinberg, Norman Richard, 3,812,383.
Skorup, Gordon Edward, 3,812,384.
Smith, Bradford Knox, 3,811,926.

Reactor Centrum Nederland: *See*—
Noothout, Arend Jaman; Kanij, Johannes Bastiaan Willem; and Votocek, Otakar, 3,812,049.

Reading, George R.: *See*—
Moorehead, Harvey Robert; and Reading, George R., 3,811,440.

Readx Inc.: *See*—
Christensen, Wynn L., 3,811,192.

Ream, Donald E., Jr.; and Brown, Gregory A., to United States of America, Navy. Azimuth readout system. 3,811,648, Cl. 7-9-73.

Recordati SA Chemical and Pharceutical Company: *See*—
Bonola, Giuseppe; and Sianesi, Enrico, 3,812,156.

Redemske, Richard K. Plastic modular furniture. 3,811,728, Cl. 297-440.000.

Reed, Robert G.: *See*—
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,811,669.

Reel Vortex, Inc.: *See*—
Ferguson, Hugo S., 3,811,255.

Rees, Alfred, to Lucas, Joseph, (Electrical) Limited. Terminal connector assembly for automotive distributor contact breaker. 3,812,305, Cl. 200-284.000.

Regelson, William, to Hercules Incorporated. Anti-herpes virus treatment. 3,812,248, Cl. 424-78.000.

Regie Nationale des Usines Renault: *See*—
Castarede, Armand, 3,811,333.

Reichel, Kurt: *See*—
Gospodar, Reinhard; Reichel, Kurt; Vogelsang, Gustav; and Thauer, Peter, 3,811,416.

Reichhold-Albert-Chemie Aktiengesellschaft: *See*—
Katsimbas, Themistoklis; Dalibor, Horst; and Quednau, Peter, 3,812,067.

Reighard, Alan B.: *See*—
Baker, Robert G.; and Reighard, Alan B., 3,811,405.

Reighard, Alan B.; and Tamny, Simon Z., to Nordson Corporation. Modular solenoid-operated dispenser. 3,811,601, Cl. 222-146.0he.

Reinberg, Ipatiya Marcewna: *See*—
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

Reinert, Donald G., to ESB Incorporated. Sealant for galvanic batteries and cells. 3,811,956, Cl. 136-133.000.

Reinhardt, Robert M.: *See*—
Cashen, Norton A.; Kullman, Russell M. H.; and Reinhardt, Robert M., 3,811,210.

Reliance Electric Company: *See*—
Wolf, Erich L.; and Flynn, William T., 3,811,522.

Rempala, Chester S., to Dick, A. B., Company. Means for sensing moving web material. 3,812,375, Cl. 250-570.000.

Remper, John A.: *See*—
Russell, Allen S.; Jarrett, Noel; Bruno, Marshall J.; and Remper, John A., 3,811,916.

Renirie, Fredericus Hendricus Ignatius: *See*—
Aten, Albert Christiaan; Van Santen, Gerrit; and Renirie, Fredericus Hendricus Ignatius, 3,812,346.

Rennolds, Philip Jackson, to Du Pont de Nemours, E. I., and Company. Phosphorus-modified ferromagnetic chromium dioxide. 3,811,942, Cl. 117-235.000.

Reno, William H.; and Westinghouse Air Brake Company. Hose connector having means for operating electrical contacts. 3,812,444, Cl. 339-15.000.

Research Corporation: *See*—
Dugan, Mary Ann, 3,812,245.

Resistoflex Corporation: *See*—
Press, Irving D.; Rink, Helm A.; and Menzel, John K., 3,811,649.

Reuter, Floyd W., to Massey-Ferguson Inc. Knife edge grinder for rotary reel type cutter head. 3,811,232, Cl. 51-249.000.

Reuvers, John F.: *See*—
Crosser, David Keith; Mell, Leonard E.; and Reuvers, John F., 3,812,532.

Rexnord Inc.: *See*—
Butzow, Neil William, 3,811,383.

Reynolds Metals Company: *See*—
Craig, H. Lee, Jr.; and Coates, Harold J., 3,812,021.
Hartz, Gerald, 3,812,270.
Rogers, Charles M.; and Schardein, Daniel J., Jr., 3,812,022.
Schardein, Daniel J., Jr.; Rogers, Charles M.; and Craig, H. Lee, Jr., 3,812,023.

Rhone-Poulenc S.A.: *See*—
Giraudon, Raymond, 3,812,173.
Guillaume, Andre; and Schneider, Charles, 3,811,981.

Rhone-Poulenc Textile: *See*—
Ohayon, Gabriel, 3,811,260.

Rice, Leonard M., to Geschickter Fund for Medical Research. Silicon substituted azaspiranes. 3,812,113, Cl. 260-240.00r.

Rich, Barry S., to Ultronic Systems Corporation. Line processing apparatus for a data processing printout system. 3,812,466, Cl. 340-172.500.

Richards, John G., to Wagner Electric Corporation. Alternator rectifier. 3,812,390, Cl. 310-68.00d.

Ricks, Earl C., to United States of America, Army. Rocket hold back and tube closure. 3,811,360, Cl. 89-1.807.

Ricoh Co., Ltd.: *See*—
Ariyama, Kenzo; Muramatsu, Shigeru; and Namiki, Ryoichi, 3,811,821.
Ohta, Wasaburo; Kasuya, Kazuhiko; Fujimoto, Sakae; and Yamauchi, Masayuki, 3,811,828.
Suzuki, Takami; and Matsuhisa, Koh, 3,811,546.

Riedel, Wolfgang, to Bosch, Robert, Photokino GmbH. Cartridge-loaded motion picture projector. 3,811,758, Cl. 352-72.000.

Rieder, Alois: *See*—
Engelsmann, Dieter; Wagensonner, Eduard; Rieder, Alois; and Von Fischern, Bernhard, 3,812,503.

Riemath, William F.: *See*—
Culver, Gordon G.; and Riemath, William F., 3,811,426.

Riggs, Darius O., to Owens-Illinois, Inc. Phase compensated multiple moving head inspection apparatus. 3,811,553, Cl. 198-33.0ab.

Rightmire, Robert A.: *See*—
Metcalfe, Joseph E., III; Rightmire, Robert A.; and Marse, Allan V., 3,811,947.

Riley, Richard Edward: *See*—
Gallup, Raymond Charles; and Riley, Richard Edward, 3,811,835.

Ringley, Michael B., to Westvaco Corporation. Method of high yield semichemical pulp production. 3,811,995, Cl. 162-19.000.

Rink, Helm A.: *See*—
Press, Irving D.; Rink, Helm A.; and Menzel, John K., 3,811,649.

Rittner, Siegbert: *See*—
Kleiner, Hans-Jerg; and Rittner, Siegbert, 3,812,222.

Rizzo, Russell S. Clam opener. 3,811,153, Cl. 17-76.000.

Roberts, Dolly A. Animal water-closet. 3,811,410, Cl. 119-1.000.

Robertson, Alastair Agnew: *See*—
Grew, Edward Leon; and Robertson, Alastair Agnew, 3,812,132.

Robertson, Arthur B.: *See*—
Stone, Herman; Robertson, Arthur B.; and Tetenbaum, Marvin T., 3,812,066.

Robertson, Donald E.: *See*—
Wehrmeister, Herbert L.; and Robertson, Donald E., 3,812,155.

Robertson, Glynn C. Protective guard for the ingition switch of a motor vehicle. 3,811,303, Cl. 70-237.000.

Robin, Michael; and Schulte, Sheldon R., to Ashland Oil, Inc. Phosphate esters of hindered phenols. 3,812,220, Cl. 260-953.000.

Robinson, Murry Clinton, to Spring Chemicals Limited. Process for treating magnesium-base waste sulfite liquor. 3,812,235, Cl. 423-158.000.

Robinson, Thomas K., Jr., to Xerox Corporation. Developing apparatus. 3,811,766, Cl. 355-3.000.

Robinson, William P.: *See*—
Trbovich, Nicholas D.; Robinson, William P.; and Trunzo, Eugene R., 3,811,674.

Rocher, Michel L. E.: *See*—
Mc Burnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., 3,811,719.

Rockwell International Corporation: *See*—
Cowell, Thomas E., 3,811,320.
Johnson, James D.; and Maytum, Alan T., 3,812,391.
Morse, Charles P., 3,811,358.
Schwarz, Robert, 3,811,473.
Treuthart, Robert L., 3,811,748.

Rockwell International Corporation, mesne: *See*—
Cummings, Alan F.; and Freeman, Gene G., 3,811,633.

Roderhoff, Bernhard, to Henkel & Cie GmbH. Process for mixed solvent priming and cementing of pressure pipes of polyvinyl chloride. 3,811,980, Cl. 156-308.000.

Rodgers, Aubrey; and Widner, Rayburn K., to United States of America, Army. Pulse duration modulation pickoff. 3,811,328, Cl. 74-5.60b.

Rogers, Charles M.: *See—*
Schardein, Daniel J., Jr.; Rogers, Charles M.; and Craig, H. Lee, Jr., 3,812,023.

Rogers, Charles M.; and Schardein, Daniel J., Jr., to Reynolds Metals Company. Pigmented siliceous coatings for aluminous metals. 3,812,022, Cl. 204-58.000.

Rogers, Joe C.; and Woolley, Brown J. Well pumping method and apparatus. 3,811,510, Cl. 166-302.000.

Rogers, John L. Apparatus for installing inserts in doors. 3,811,666, Cl. 269-9.000.

Rohm & Haas Company: *See—*
Barrett, James H., 3,812,061.
Clovis, James S.; and Sullivan, Francis R., 3,812,219.
Dunkelberger, David L., 3,812,205.
Kelley, Louis E., 3,812,070.

Rohm GmbH: *See—*
Esser, Franz; Hanstein, Friedrich; Hosch, Ludwig; and Mueller, Dieter, 3,812,208.

Roller-Werke Franke & Heidecke: *See—*
Mielke, Bodo, 3,812,501.

Romanowski, Edward A.: *See—*
Creutz, Hans-Gerhard; Romanowski, Edward A.; and Symons, Philip C., 3,811,946.

Romine, Hugh E., to Continental Oil Company. Preparation of synthetic hydrocarbon lubrication. 3,812,036, Cl. 252-59.000.

Ronson Societe Anonyme: *See—*
Toiseux, Pierre, 3,811,819.

Rosales, Joseph G., to Ackley, Donald M. Redundant bearing. 3,811,742, Cl. 308-183.000.

Rosenbaum, Georges: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 3,812,246.

Rosenfield, Richard Gordon: *See—*
Bauer, Robert; Rosenfield, Richard Gordon; and Rupe, Chauncey Orvis, 3,811,840.

Ross, Albert L.: *See—*
Mare, Peter D.; and Ross, Albert L., 3,811,986.

Ross, James A., Jr.: *See—*
Murtha, John C.; and Ross, James A., Jr., 3,812,470.

Rotary Profile Anstalt: *See—*
Marcovitch, Jacob, 3,811,308.

Roth, Larry L.; and Liston, Joseph. Rotary engine with interengaging rotating members and reversing valve. 3,811,804, Cl. 418-32.000.

Rother, Lucille S.: *See—*
Rother, William L., 3,811,389.

Rother, William L.; deceased (by Rother, Lucille S.; administrator). Grain drill. 3,811,389, Cl. 111-91.000.

Rothschmitt, Anton J.: *See—*
Bradbury, William B.; and Rothschmitt, Anton J., 3,811,627.

Rougeot, Henri, to Thomson-CSF. Solid state sequential switching device. 3,812,369, Cl. 250-553.000.

Rousseau, Hubert Cecyl Albert; and Brette, Yves-Jean Francois, to Societe Industrielle Honeywell Bull (Societe Anonyme). Ventilation device for magnet disk unit. 3,812,534, Cl. 360-98.000.

Roussel-UCLAF: *See—*
Bertin, Daniel; Perronnet, Jacques; and Teche, Andre, 3,811,863.

Rowland Development Corporation: *See—*
Rowland, William P., 3,811,983.

Rowland, William P., to Rowland Development Corporation. Method for producing retroreflective sheeting. 3,811,983, Cl. 156-245.000.

Rube, Helmut; and Krumbein, Fritz, to Bosch, Robert, Photokino GmbH. Operating mechanism for motion picture projectors. 3,811,760, Cl. 352-157.000.

Rubis, Casimer Joseph: *See—*
Johnson, Roy D.; and Rubis, Casimer Joseph, 3,812,411.

Rud, Svetlana Ivanovna: *See—*
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.

Rudmann, Jerald J.: *See—*
Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., 3,811,974.

Rueckl, Roger L.: *See—*
Chao, Hung-Chi; Judd, Robert R.; Rueckl, Roger L.; and Russell, Charles K., 3,811,878.

Ruegg, Max, to Hess & Cie Metallwarenfabrik. Air outlet for ventilation equipment. 3,811,369, Cl. 98-40.00d.

Rumbold, Bernhard Carl; and Cartwright, John Edward, to Foseco International, Ltd. Heat-insulating antipiping compositions. 3,811,898, Cl. 106-38.028.

Rumpel, Harvey R., to Universal Oil Products Company. Seat belt anchor mechanism for adjustable seat. 3,811,727, Cl. 297-385.000.

Rumpf, Jurg: *See—*
Hoegerle, Karl; Muller, Jean-Claude; Vogel, Christian; and Rumpf, Jurg, 3,812,168.

Rumpold, Karl O.: *See—*
Higatsberger, Michael J.; Rumpold, Karl O.; and Viehbock, Franz P., 3,812,364.

Rupe, Chauncey Orvis: *See—*
Bauer, Robert; Rosenfield, Richard Gordon; and Rupe, Chauncey Orvis, 3,811,840.

Ruschke, Lawrence J., Jr.: *See—*
Wagner, Everett F.; Sidlo, Joseph J.; and Ruschke, Lawrence J., Jr., 3,812,307.

Rusco Industries, Inc.: *See—*
Kramer, David C., 3,811,977.

Russell, Alan F.: *See—*
Moffatt, John G.; and Russell, Alan F., 3,812,098.

Russell, Allen S.; Jarrett, Noel; Bruno, Marshall J.; and Remper, John A., to Aluminum Company of America. Method for carbon impregnation of alumina. 3,811,916, Cl. 117-46.0cb.

Russell, Charles K.: *See—*
Chao, Hung-Chi; Judd, Robert R.; Rueckl, Roger L.; and Russell, Charles K., 3,811,878.

Russell, Richard H.: *See—*
Crawford, James E.; and Russell, Richard H., 3,811,921.

Ruszczyk, James F.; and Secrist, Duane R., to International Business Machines Corporation. Method for molding and air bearing magnetic head with a glass slider body. 3,811,856, Cl. 65-48.000.

Ryan, Arthur Sensor, to Weyer Haeuser Company. Cushioned absorbent pad. 3,812,001, Cl. 161-114.000.

Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., to International Business Machines Corporation. Object handling fixture, system, and process. 3,811,182, Cl. 29-574.000.

Ryu, Dewey D. Y.: *See—*
Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., 3,812,110.

S.A. Texaco Belgium N.V.: *See—*
Dulog, Lothar G.; and Dewaele, Sylvain A. R., 3,812,033.

Sacerdoti, Giancarlo; Catitti, Aldo; and Di Marino, Ciampino, to Comitati Nazionale Per l'Energia Nucleare (CNEN). Self-centering rotary magnetic suspension device. 3,811,740, Cl. 308-10.000.

Safety Vehicles Development AB: *See—*
Forssman, Jan Robert Fleming, 3,811,531.

Sagami Chemical Research Center: *See—*
Saito, Tomoo; Morikawa, Naotake; and Watanabe, Kazuo, 3,811,838.

Saint-Gobain Industries: *See—*
Gimenez, German Artigas, 3,811,861.
Vermeerbergen, Leon Roger; and Flamand, Guy Antoine, 3,811,588.

Saito, Minoru: *See—*
Handa, Takashi; and Saito, Minoru, 3,811,992.

Saito, Takashi; and Kubo, Shuniti, to Canon Kabushiki Kaisha. Method of transferring images produced by liquid development. 3,811,914, Cl. 117-37.0le.

Saito, Tomoo; Morikawa, Naotake; and Watanabe, Kazuo, to Sagami Chemical Research Center. Method and apparatus for measuring radioactivity of organic substance. 3,811,838, Cl. 23-230.0pc.

Sakaguchi, Namoru: *See—*
Katagiri, Keizo; Sakaguchi, Namoru; and Kamata, Tokumaro, 3,812,005.

Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Vehicle speed limiting device. 3,811,418, Cl. 123-103.00r.

Sakamoto, Michio; and Tanaka, Masao, to Nippon Automation Co., Ltd. Reed switch mechanism making use of heat-sensitive ferrite. 3,812,441, Cl. 335-208.000.

Saladrigas, Jorge S. Game played on stilts with nonround ball. 3,811,677, Cl. 273-118.00r.

Salmon, Robert W.; and Herstein, Barry S., to Buddy L Corporation. Modular toy vehicle. 3,811,218, Cl. 46-17.000.

Salo, Martin: *See—*
Gallagher, John F.; and Salo, Martin, 3,811,924.

Salukvadze, Viktor Samsonovich. Rotary cutting tool. 3,811,161, Cl. 29-81.00h.

Salvucci, Joseph L., Jr.; and Yiannos, Peter N., to Scott Paper Company. Soft, Absorbent, fibrous, sheet material formed by avoiding mechanical compression of the elastomer containing fiber furnish until the sheet is at least 80% dry. 3,812,000, Cl. 162-11.000.

Samcoe Holding Corporation: *See—*
Cecere, Andrew P., 3,811,159.

Samsonov, Ivan Sergeevich: *See—*
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich, 3,811,812.

Samuelson, Carl E.: *See—*
Larnerd, John D.; McGarigle, Donald M.; and Samuelson, Carl E., 3,811,186.

Samura, Hiroyoshi, to Citizen Watch Company Limited. Calendar timepiece. 3,811,266, Cl. 58-58.000.

Sanderson, Gary Warner; and Coggon, Philip, to Lipton, Thomas J., Inc. Green tea conversion using tannase and natural tea enzymes. 3,812,266, Cl. 426-52.000.

Sandoz Ltd.: *See—*
Hofer, Kurt; and Voykowitsch, Anton, 3,812,152.

Sankyo Company Limited: *See—*
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, 3,812,134.

Sann, Bernhard, to Gewerkschaft Eisenhutte Westfalia. Longwall cutter driven by equally spaced motors. 3,811,731, Cl. 299-34.000.

Sano, Kenji: *See—*

Miyata, Etsutaro; Kamuro, Setsufumi; and Sano, Kenji, 3,812,285.
Santangelo, Joseph G.; and Dorchak, Thomas P., to Kennecott Copper Corporation. Desulfurized char with phosphoric acid. 3,812,017, Cl. 201-17.000.
Sanyo Electric Co., Ltd.: *See*—
Niwa, Shinichi, 3,812,039.
Sargent and Company Division of Walter Kidde & Co.: *See*—
Floyd, Alfred E.; and Erickson, Lars E., 3,811,717.
Sarkes Tarzian, Inc.: *See*—
Tkacenko, Nikola B., 3,812,286.
Sarnoff, Stanley J., to Survival Technology, Inc. Cartridge syringe. 3,811,441, Cl. 128-218.0da.
Sastri, Aiyaswami S., to Gillette Company, The. Process for producing an improved cutting tool. 3,811,189, Cl. 30-346.530.
Sato, Hironobu: *See*—
Yamanaka, Izumi; Sato, Hironobu; and Takeuchi, Yoshihiro, 3,811,615.
Sato, Hiroshi; Nishio, Daijiro; and Takahashi, Takeshi, to Fuji Photo Film Co., Ltd. Process for the preparation of pyrazolone derivatives. 3,812,145, Cl. 260-310.00a.
Sato, Hisatake; and Hayashi, Hiedo, to Nippon Oil Company, Limited. Synthetic rubber composition. 3,812,216, Cl. 260-887.000.
Sato, Kiyoomi; and Ishidera, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Clutch disc with friction and resilient dampers. 3,811,545, Cl. 192-106.100.
Sato, Shuichi; and Yamaguchi, Tadanori, to Sony Corporation. Continuously variable threshold transistor. 3,812,517, Cl. 357-23.000.
Sato, Takayoshi, to Kabushikikaisha Copal. Exposure control circuit for IIL camera. 3,812,502, Cl. 354-51.000.
Sauey, Lawrence K.; Mason, Leroy W.; and Rau, Gerald A., to Flambeau Products Corporation. Adjustable fishing rod case. 3,811,216, Cl. 43-26.000.
Savushkin, Anatoly Alexandrovich: *See*—
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich, 3,811,812.
Sawyer, John M.: *See*—
Holding, Thomas; Schisler, Robert C.; and Sawyer, John M., 3,811,570.
Sayles, David C., to United States of America, Army. Solid propellant with non-metallic burning rate catalysts. 3,811,964, Cl. 149-19.100.
Sayles, David C., to United States of America, Army. Propellants containing combination burning rate synergist and curing agent of epoxyaliphatic carborane. 3,811,965, Cl. 149-19.200.
Sayles, David C., to United States of America, Army. Polymerization crosslinking agent for polybutadiene propellant prepolymers. 3,811,968, Cl. 149-19.900.
Saylor, William H., Jr., to Bethlehem Steel Corporation. Movable descaler spray header. 3,811,305, Cl. 72-39.000.
Scammon, Lawrence W., Jr.; Grant, Clarence L.; and Wilks, Phillip H., to Humphreys Corporation. Processing of silicate ores and product thereof. 3,811,907, Cl. 106-299.000.
Schaefer, Donald D.: *See*—
Moody, Harold W., Jr.; and Schaefer, Donald D., 3,811,805.
Schaefer, Horst: *See*—
Kuhlkamp, Alfred; Rauterkus, Karl Josef; Schaefer, Horst; and Seip, Detlev, 3,812,072.
Schaefer, John W. Fluid control device. 3,811,470, Cl. 137-540.000.
Schaefer, Louis F.: *See*—
Macovski, Albert; and Schaefer, Louis F., 3,812,527.
Schafer, Heinrich; and Nieder-Vahrenholz, Hans Georg, to Bayer Aktiengesellschaft. Process for the production of alkali-chromate. 3,812,234, Cl. 423-61.000.
Schankler, Martin M. Prefabricated swimming pool construction. 3,811,137, Cl. 4-172.190.
Schardein, Daniel J., Jr.: *See*—
Rogers, Charles M.; and Schardein, Daniel J., Jr., 3,812,022.
Schardein, Daniel J., Jr.; Rogers, Charles M.; and Craig, H. Lee, Jr., to Reynolds Metals Company. Anodic production of pigmented siliceous coatings for aluminous metals. 3,812,023, Cl. 204-58.000.
Schatt Industries, Inc.: *See*—
Tucker, Raymond Z.; and Benson, Jack O., 3,811,706.
Schaub, Gerhard; and Schramm, Karl, to Gebr. Buhler Nachfolger GmbH. Circuit for regulating the speed of a direct current motor. 3,812,410, Cl. 318-328.000.
Scheier, Donald J.; and Bonuchi, James A., to Johnson, Gordon, Company. Divider mechanism for article conveyors. 3,811,555, Cl. 198-177.000.
Scheinberg, Norman Richard, to RCA Corporation. High speed signal following circuit. 3,812,383, Cl. 307-228.000.
Schempp, Eberhard G.; and Pearce, Jai K., to Pennsylvania Engineering Corporation. Steel production method and apparatus. 3,812,275, Cl. 13-10.000.
Schenck, Carl, Maschinenfabrik GmbH: *See*—
Hack, Heinrich, 3,811,327.
Schenk, Peter, to Dzus Fastener Co., Inc. Tamper-proof fastener. 3,811,157, Cl. 24-221.00r.
Schering Aktiengesellschaft: *See*—
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, 3,812,165.
Pfeiffer, Heinrich; Kolb, Karl Heinz; Harwart, Alois; and Schulze, Paul E., 3,812,151.
Wiechert, Rudolf; and Steinbeck, Hermann, 3,812,166.
Schering Corporation: *See*—
Morrison, David J., 3,811,483.
Scherpenborg, Arnold H. Horse fly collar. 3,811,413, Cl. 119-106.000.
Schexnayder, Lawrence F., to Caterpillar Tractor Co. Hydraulic control circuit for a reversible hydraulic motor. 3,811,282, Cl. 60-421.000.
Schibbye, Laurtiz Benedictus, to Svenska Rotor Maskiner Aktiebolag. Method of operating a refrigeration plant and a plant for performing the method. 3,811,291, Cl. 62-84.000.
Schick Incorporated: *See*—
Brenneman, J. Edward; and Waters, Robert S., 3,811,188.
Schild, A., S.A.: *See*—
Zaugg, Roland; and Fluck, Josef, 3,811,267.
Schilling, Paul K.; and Eckdahl, Thomas H., to Plastics, Inc. Closable dinner service. 3,811,560, Cl. 206-4.000.
Schindler, Walter: *See*—
Zust, Armin; and Schindler, Walter, 3,812,126.
Schirmer, Edward F.: *See*—
Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., 3,811,182.
Schisler, Robert C.: *See*—
Holding, Thomas; Schisler, Robert C.; and Sawyer, John M., 3,811,570.
Schlicht, Raymond C.: *See*—
McCoy, Frederic C.; and Schlicht, Raymond C., 3,812,031.
Schliebs, Reinhard: *See*—
Braden, Rudolf; Hendricks, Udo; Oertel, Gunter; and Schliebs, Reinhard, 3,812,221.
Schlomer, Josef; and Hof, Georg, to Wurttembergische Metallwerke. Method for manufacturing porous metal fiber felts. 3,811,976, Cl. 156-62.800.
Schlumberger, N., & Cie: *See*—
Herubel, Jean Frederic, 3,811,152.
Schlumberger Technology Corporation: *See*—
Crawford, Gerald J. B., 3,811,529.
Urbanosky, Harold J., 3,811,321.
Schmid & Wezel: *See*—
Wezel, Hans; and Zeller, Manfred, 3,811,513.
Schmidt, Charles J.: *See*—
Cyrway, Edward N., Jr.; and Schmidt, Charles J., 3,812,276.
Schmidt, Donald L.; Daniels, Arthur L.; and Petrella, Ronald V., to Dow Chemical Company, The. Preparation of aluminum hydride. 3,812,244, Cl. 423-645.000.
Schmidt, Ernst Georg Ferdinand Heinrich, to Jacobs, Joh., & Company. Method for the mechanical preparation of individual cups of filtered coffee. 3,812,273, Cl. 426-433.000.
Schmidt, Helmut: *See*—
Schmidt, Helmut, 3,811,459.
Schmidt, Helmut, to Schmidt, Helmut and Fietz, Erwin. Pressure indicating valve. 3,811,459, Cl. 137-227.000.
Schmidt, Joseph J., to Chesapeake and Ohio Railway Company, The and Baltimore and Ohio Railroad Company, The. Means for reading and interpreting color-coded identification labels. 3,812,325, Cl. 235-61.11e.
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; Maillet, Wilfrid G.; and Haeberle, Heinz H., to Communications Satellite Corporation. TDMA satellite communications system with improved acquisition. 3,812,430, Cl. 325-4.000.
Schmidtchen, Juergen: *See*—
Glaser, Rudolf; Schmidtchen, Juergen; and Bauer, Peter, 3,812,207.
Schmitt, Ernst: *See*—
Boehmke, Gunther; and Schmitt, Ernst, 3,812,107.
Schmitt, Nickolas: *See*—
Barton, Sterling C.; and Schmitt, Nickolas, 3,812,392.
Schneider, Charles: *See*—
Guillaume, Andre; and Schneider, Charles, 3,811,981.
Schneider, Fredric H. Apparatus for simultaneously fabricating plurality of wall frames. 3,811,167, Cl. 29-200.00p.
Schneiderman, Daniel I.: *See*—
Bowman, Lloyd D.; Karhade, Manohar G.; and Schneiderman, Daniel I., 3,812,330.
Schoenholz, Daniel: *See*—
Corey, Harold; Bakal, Abraham; Konigsbacher, Kurt; and Schoenholz, Daniel, 3,812,268.
Schoer, Heinz; and Schultze, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Process for brazing workpieces of aluminium containing material. 3,811,177, Cl. 29-494.000.
Schoerner, Roger J.; and Chia, Enrique C., to Southwire Company. Aluminum alloy electrical conductor. 3,811,846, Cl. 29-193.000.
Schorr, Manfred; Durchkeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Phenylene-bis-dithiocarbamic acid esters. 3,812,131, Cl. 260-283.00s.
Schortmann, Walter E.; and Derose, Michael A., to Texon Inc. Replacement for leather and method for making same. 3,812,006, Cl. 162-146.000.
Schramm, Karl: *See*—
Schaub, Gerhard; and Schramm, Karl, 3,812,410.
Schreiner, Horst: *See*—
Hassler, Heinrich; and Schreiner, Horst, 3,811,939.
Schroeder, Charles E., to Coilcraft, Inc. Stapled coil construction. 3,812,443, Cl. 336-192.000.
Schuler, Ralph J.: *See*—
Weichhand, Robert J.; Schuler, Ralph J.; and Dieter, Julian A., 3,811,330.

Schulte, Sheldon R.: *See*—
Robin, Michael; and Schulte, Sheldon R., 3,812,220.
Schultze, Lawrence E.: *See*—
Bauer, Donald J.; Lindstrom, Roald W.; and Schultze, Lawrence E., 3,812,232.
Schultze, Werner: *See*—
Schoer, Heinz; and Schultze, Werner, 3,811,177.
Schulz, Jay R., to Dow Corning Corporation. Silicone elastomers with paintable surface. 3,812,164, Cl. 260-375.00b.
Schulze, Paul E.: *See*—
Pfeiffer, Heinrich; Kolb, Karl Heinz; Harwart, Alois; and Schulze, Paul E., 3,812,151.
Schut, Hendrik P., to Boeing Company, The. Electromagnetic high energy impact apparatus. 3,811,313, Cl. 72-430.000.
Schwarz, Karl, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Storage tank installation. 3,811,598, Cl. 220-88.00r.
Schwarz, Robert, to Rockwell International Corporation. Fluidic pressure regulator. 3,811,473, Cl. 137-810.000.
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, to Triatex International AG. fur Textile Forschung Entwicklung. Method and apparatus for finishing cellulose-containing textile materials and textile materials thus produced. 3,811,834, Cl. 8-116.00r.
Schwieter, Ulrich: *See*—
Chodnekar, Madhukar S.; Thommen, Hans; and Schwieter, Ulrich, 3,812,262.
Scope Incorporated: *See*—
Brodes, Donald L.; and Hitchcock, Myron H., 3,812,291.
Scott, Allan W., to Varian Associates. Dual mode TWT for low power CW and high power pulsed operation. 3,812,395, Cl. 315-3.600.
Scott, John A.: *See*—
Hammond, Philip D.; and Scott, John A., 3,812,169.
Scott, John J. Process for the recovery of tantalum and niobium and other metals from tin slag. 3,811,867, Cl. 75-24.000.
Scott Paper Company: *See*—
Salvucci, Joseph L., Jr.; and Yiannos, Peter N., 3,812,000.
Scott, William P.: *See*—
Krenowicz, Robert A.; and Scott, William P., 3,812,035.
Scuderi, Rudolph: *See*—
Ostapiak, Roman; and Scuderi, Rudolph, 3,812,435.
Seaberg, David H., to Case, J. I., Company. Hydraulic leveling circuit for implement. 3,811,587, Cl. 214-763.000.
Seaco Computer-Display Incorporated: *See*—
Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H., 3,811,769.
Searle, G. D., & Co.: *See*—
Baran, John S.; and Pitzele, Barnett S., 3,812,097.
Sebek, Oldrich K.: *See*—
Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., 3,812,096.
Secord, Dean Brian: *See*—
Dittrich, Robert George; Secord, Dean Brian; and Thelemaque, Louis Emanuel, 3,812,298.
Secrist, Duane R.: *See*—
Ruszczyk, James F.; and Secrist, Duane R., 3,811,856.
Sedgewick, Richard Duane. Process of winding cores. 3,811,629, Cl. 242-4.00a.
Sedlecky, Jaromir: *See*—
Peschl, Ervin; Zmatlik, Josef; Sedlecky, Jaromir; and Kolar, Vladimir, 3,811,299.
Seelig, Frederick A., to Bendix Corporation, The. Flexural pivot with diaphragm means. 3,811,665, Cl. 267-160.000.
Seely, Robert W.; and Batson, William A., to Singer, Company, The. Collet for a power tool. 3,811,361, Cl. 90-12.00d.
Segonzac, Jean-Michel; and Lucas, Jean-Marie, to La Calhene and Piercan S.A. Cuff for a glove, bag or the like, for manipulation inside sealed enclosures. 3,811,132, Cl. 2-270.000.
Seid, Bernard: *See*—
Barrett, Hillard E.; Clark, Donald B.; and Seid, Bernard, 3,811,713.
Seip, Detlev: *See*—
Kuhlkamp, Alfred; Rauterkus, Karl Josef; Schaefer, Horst; and Seip, Detlev, 3,812,072.
Seismograph Service Corporation: *See*—
Crossland, Edward J.; Blossom, James H.; and Krasin, Lester Q., 3,812,462.
Sekihara, Takeshi: *See*—
Ito, Ikoh; Sekihara, Takeshi; Emura, Tomoyuki; and Ueda, Takeshi, 3,812,073.
Semersky, Frank E., to Owens-Illinois, Inc. Stereospecific process for the preparation of L-3,4-dihydroxy-phenylalanine (L-dopa) and analogs thereof. 3,812,009, Cl. 195-29.000.
Semi, Inc., mesne: *See*—
Wesson, Richard A.; and Platter, Sandford, 3,811,829.
Semple, Charles A., to Engineering Concrete Placer, Inc. Slurry pump cleanout mechanism. 3,811,802, Cl. 417-454.000.
Sensinger, Warner E., Jr.: *See*—
Buse, Frederick W.; and Sensinger, Warner E., Jr., 3,811,801.
Sertich, Anthony T. Air-vibrator dental scaler. 3,811,190, Cl. 32-56.000.
Servo Corporation of America: *See*—
Gallagher, Cornelius A.; and Glazar, Arthur J., 3,812,343.
Servotronics, Inc.: *See*—
Trbovich, Nicholas D.; Robinson, William P.; and Trunzo, Eugene R. (said Robinson and said Trunzo assors to), 3,811,674.
Severini, Febo: *See*—
Natta, Giulio; Beati, Enrico; Severini, Febo; and Toffano, Silvio, 3,812,204.
Shanker, Irvin Paul: *See*—
Johnson, Robert William; and Shanker, Irvin Paul, 3,811,759.
Sharp Kabushiki Kaisha: *See*—
Miyata, Etsutaro; Kamuro, Setsufumi; and Sano, Kenji, 3,812,285.
Sharp, Richard S.: *See*—
Wollum, James E.; Birchmeier, Hans P.; and Sharp, Richard S., 3,812,468.
Shaw, Kenneth W. Stretcher. 3,811,139, Cl. 5-82.000.
Shell Oil Company: *See*—
Skoroszewski, Wladyslaw H., 3,812,228.
Weller, Charles E., 3,812,457.
Westra, Simon, 3,811,142.
Shen, Lawrence Yun Lung: *See*—
Dunkleberger, La Rue Norman; and Shen, Lawrence Yun Lung, 3,811,794.
Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. Substituted indenyl glucoronide esters. 3,812,109, Cl. 260-240.00r.
Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. 1-Methyl sulfinylbenzylidene-1,3,4,5-tetrahydro-5-oxo-benz-(c,d)-indene-3-carboxylic acid and esters. 3,812,180, Cl. 260-515.00a.
Shepherd, Robert Gordon: *See*—
Albright, Jay Donald; and Shepherd, Robert Gordon, 3,812,141.
Sheppard, Chester Stephen: *See*—
MacLeay, Ronald Edward; Lange, Harold Carl; and Sheppard, Chester Stephen, 3,812,094.
Sheppard, Chester Stephen; MacLeay, Ronald Edward; and Bafford, Richard Anthony, to Pennwalt Corporation. Compounds having peroxy and aliphatic azo groups and methods using these as initiators. 3,812,095, Cl. 260-192.000.
Sheppard, Gilbert Leslie, to Strachan & Henshaw Limited. Wagon tipplers. 3,811,580, Cl. 214-55.000.
Sherrard-Smith, Kenneth Irwin, to Imperial Chemical Industries, Limited. Calender rolls. 3,811,165, Cl. 29-132.000.
Shibaoka, Haruo; and Matsushita, Sachio, to Fuji Photo Film Co., Ltd. Composition for processing silver halide photographic light-sensitive elements. 3,811,888, Cl. 96-66.00r.
Shields, C. Nelson, Jr.; trustee: *See*—
Bassett, Max, 3,811,289.
Shiina, Naonori: *See*—
Hosoda, Kirokuro; and Shiina. Naonori, 3,812,225.
Shill, Karl. Blood pump. 3,811,800, Cl. 417-317.000.
Shimizu, Munetaka; and Takayama, Masao, to Kabushiki Kaisha Koparu and Electronic shutter for photographic cameras. 3,812,512, Cl. 354-258.000.
Shinetsu Chemical Company: *See*—
Koyanagi, Shiniche; Kitamura, Hajima; and Maruyama, Akiyoshi, 3,812,215.
Shinkawa, Toshiyuki: *See*—
Muraishi, Masakazu; Hamada, Noriaki; Shinkawa, Toshiyuki; and Arai, Tomiji, 3,811,726.
Shionogi & Co., Ltd.: *See*—
Tanaka, Hozumi; Ikawa, Kenji; and Takami, Fumitaka, 3,812,124.
Shirai, Akira: *See*—
Yonezawa, Teruhiko; and Shirai, Akira, 3,811,894.
Shirley, Joseph Floyd; Caropreso, Frank Edward; and Fraser, George Lamar, to FMC Corporation. Flotation recovery of molybdenite. 3,811,569, Cl. 209-167.000.
Shook, Theodore A.: *See*—
Barkan, Philip; Kelley, Fred W., Jr.; and Shook, Theodore A., 3,812,404.
Short, Oliver A.; and Weaver, Richard V., to Du Pont de Nemours, E. I., and Company. Gold powder. 3,811,906, Cl. 106-290.000.
Shufelt, Robert C.: *See*—
Grey, Edward H.; and Shufelt, Robert C., 3,812,200.
Shufflebarger, Earl D.: *See*—
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.
Shumaker, John F.; and Morehouse, James O., to Case, J. I., Company. Backhoe boom lock. 3,811,582, Cl. 214-138.000.
Shupe, Russell D.: *See*—
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,504.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,505.
Flournoy, Kenoth H.; and Shupe, Russell D., 3,811,507.
Shurgan, Joel: *See*—
Koo, Ronald C.; and Shurgan, Joel, 3,812,393.
Shuster, Sergei Alexandrovich: *See*—
Zabolotsky, Grigory Mikhailovich; Rakovsky, Vladimir Mikhailovich; Shuster, Sergei Alexandrovich; and Boldyrev, Mikhail Vsevolodovich, 3,811,166.
Shusters, Yanis: *See*—
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.
Sianesi, Enrico: *See*—
Bonola, Giuseppe; and Sianesi, Enrico, 3,812,156.
Sidlo, Joseph J.: *See*—

Wagner, Everett F.; Sidlo, Joseph J.; and Ruschke, Lawrence J., Jr., 3,812,307.
Siegel, Pierre Louis; and Delorme, Raymond Louis, to Societe Honeywell Bull (Societe Anonyme). Device for adjusting the position of flexible strip provided with lateral perforations. 3,811,609, Cl. 226-52.000.
Siemens A.G.: *See—*
Kresse, Heinz, 3,811,427.
Siemens Aktiengesellschaft: *See—*
Deckert, Andreas, 3,812,280.
Diel, Burkhart; Gregor, Kurt; and Huber, Walther, 3,811,187.
Hassler, Heinrich; and Schreiner, Horst, 3,811,939.
Lutz, Roman, 3,812,290.
Pohl, Dieter, 3,812,284.
Prag, Rudolf; and Dierker, Joachim, 3,812,361.
Sigma Systems, Inc.: *See—*
Cunningham, Russell E.; and Light, Gordon S., 3,812,347.
Silverberg, Carl G.: *See—*
Defg, Emil W.; Silverberg, Carl G.; and Martel, Leslie B., 3,811,857.
Silvetti, Anthony N. Method of treating wounds with a medicinal dressing. 3,812,252, Cl. 424-180.000.
Simard, Joseph G. C.: *See—*
Goodnow, Warren H.; Cauvin, Sidney L., Jr.; and Simard, Joseph G. C., 3,812,024.
Simko, David M.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Nedvich, Richard J.; Boylan, John R.; and Danko, Oliver L., 3,811,651.
Simmons, Clarence C. Frictional exercising apparatus. 3,811,672, Cl. 272-79.00r.
Simon, Myron S., to Polaroid Corporation. Photographic processes and products employing naphthol sulfonamidonaphthalides as optical filter agents. 3,811,881, Cl. 96-3.000.
Simovits, Stephen S., Jr.; and Dumas, Christ J., to American Plasticraft Company. Relay socket. 3,812,450, Cl. 339-128.000.
Sinclair, Richard A., 10% to Cox, James F. Electric lamp or fuse socket. 3,812,446, Cl. 339-41.000.
Singer Comapny, The: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,811,493.
Singer Company, The: *See—*
Marchese, Vincent P.; and Rakowsky, Edward L., 3,811,359.
Seely, Robert W.; and Batson, William A., 3,811,361.
Witteles, Abraham A.; and Putterman, Harry, 3,812,479.
Singer Company, The, mesne: *See—*
Bilinski, Donald J.; and Weisbord, Leon, 3,811,172.
Singhal, Subhash C.: *See—*
Weinstein, Martin; Singhal, Subhash C.; and Ellis, John L., 3,811,961.
Siragusa, George A.: *See—*
Marshall, Albert H.; and Siragusa, George A., 3,811,204.
Sirles, Robert A. Mud clip for a horseshoe. 3,811,512, Cl. 168-34.000.
Sittmann, Brigitte, to Vereinigte Baubeschlag Fabriken Gretsch & Co., GmbH. Ski safety binding element with adjustable release force. 3,811,696, Cl. 280-11.35t.
Siwersson, Olle Lennart; and Tell, Karl Gunnar, to AB St. Powercell, mesne. Method and apparatus for supplying entirely substantially entirely consumable metallic material to a magnetic electrode oxygen or metal air cell. 3,811,952, Cl. 136-86.00a.
Sjostrom, Carl H.: *See—*
Bridges, Thomas F.; Lalangas, Petros; and Sjostrom, Carl H., 3,811,593.
SKF Industrial Trading and Development Company NV: *See—*
Nilsson, Sven Walter, 3,811,784.
SKF Kugellagerfabriken GmbH: *See—*
Polk, Edgwin R., 3,811,996.
Skinner, Charles A., to Baxter Laboratories, Inc. Electric surface type heating element and insulator combination. 3,812,321, Cl. 219-451.000.
Skoroszewski, Wladyslaw H., to Shell Oil Company. Injection molding of foamable thermoplastic polymers using a retractable hot runner. 3,812,228, Cl. 264-54.000.
Skorup, Gordon Edward, to RCA Corporation. set-reset flip-flop. 3,812,384, Cl. 307-238.000.
Skripko, Gely Fomich: *See—*
Frenkel, Shiman Tevelievich; Skripko, Gely Fomich; Golub, Georg Froimovich; Prudnikov, Evgeny Leonidovich; and Ganelin, Naum Borisovich, 3,811,520.
Skutelis, Antons Petrowich: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.
Slavik, William H.: *See—*
Ivas, Thomas W.; and Slavik, William H., 3,812,524.
Sletzinger, Meyer: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,812,187.
Slocum, Chester D., Jr. Electrostatic for deionizing air and other gases. 3,812,399, Cl. 317-2.00f.
Smidth, F. L., & Co.: *See—*
Theil, Sven E., 3,811,824.
Smilg, Benjamin, to Globe Safety Products, Inc. Fluid operated alarm system. 3,811,400, Cl. 116-70.000.
Smith, Albert Ernest; and Ingram, James Charles, to Polysar Limited-Polysar Limitee. Process for the production of porous polymeric materials. 3,812,224, Cl. 264-28.000.
Smith, Basil G., to Smith, Basil, Seals Limited. Machanical seal for rotary shaft. 3,811,688, Cl. 277-39.000.
Smith, Basil, Seals Limited: *See—*
Smith, Basil G., 3,811,688.
Smith, Bradford Knox, to RCA Corporation. Method for coating only the convex major surface of an apertured mask for a cathode-ray tube. 3,811,926, Cl. 117-101.000.
Smith, Drexel Kermit: *See—*
Dempsey, James Joseph; and Smith, Drexel Kermit, 3,811,979.
Smith, Floyd O., to Esco Corporation. Shackle for kiln chain. 3,811,270, Cl. 59-86.000.
Smith, Henry G. Apparatus for measuring a work material for cutting to desired lengths. 3,811,196, Cl. 33-185.00r.
Smith, Hoyt L.: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,811,669.
Smith, James Lanson: *See—*
Kish, Donald Eugene; and Smith, James Lanson, 3,812,480.
Smith, Kline & French Laboratories: *See—*
Dickinson, Ben W. O., III; Dickinson, Robert W.; and Miller, Cecil R. (said Miller, Cecil R.; assors. to), 3,811,424.
Smith, Macfarlan, Limited: *See—*
Grew, Edward Leon; and Robertson, Alastair Agnew, 3,812,132.
Smith, Samuel. Gun case. 3,811,562, Cl. 206-317.000.
Smithkline Corporation: *See—*
Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,812,255.
Snape, Edwin, to International Nickel Company, Inc., The. Corrosion resistant high strength alloy. 3,811,872, Cl. 75-122.000.
Snell, Foster D., Inc.: *See—*
Corey, Harold; Bakal, Abraham; Konigsbacher, Kurt; and Schoenholz, Daniel, 3,812,268.
Snyder, Paul W., Jr., to Mobil Oil Corporation. Device for injecting easily coked fluids into a high temperature vessel. 3,812,029, Cl. 208-113.000.
Soares, Edward W., Jr., to Gulf & Western Precision Engineering Company. Method of forming workpieces by abrading. 3,811,234, Cl. 51-323.000.
Societa Italiana Resine S.I.R., S.p.A.: *See—*
Piccolo, Luigi; Calcagno, Benedetto; and Ghirga, Marcello, 3,811,908.
Piccolo, Luigi; Ghirga, Marcello; and Calcagno, Benedetto, 3,812,241.
Societa Italiana Resine S.p.A.: *See—*
Barilli, Filippo; Cozza, Giorgio; and Bareggi, Vittorio, 3,812,242.
Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques, 3,811,738.
Le Marchand, Alain, 3,811,472.
Societe Anonyme dite: L'Oreal: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 3,812,246.
Societe Anonyme pour tour Appareillages Mecaniques: *See—*
Capdevielle, Pierre; and Kermarrec, Francois, 3,811,460.
Societe Anonyme: Compagnie Electro-Mecanique: *See—*
06/21/74; and Sterlini, Jacques, 3,811,663.
Societe Civile Soltex: *See—*
d'Albignac, Jean Marie Louis Jules; and Gamaury, Jean-Francois, 3,811,836.
Societe Civile Textile dite: Socitex: *See—*
Batsch, Guy, 3,811,258.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Bouldoires, Jean-Pierre, 3,811,199.
Societe d'Etudes de Poly-techniques Sepotec: *See—*
Galy, Georges, 3,812,326.
Societe d'Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M.: *See—*
Pont, Dominique; Lafont, Andre; and Voisin, Alain, 3,811,527.
Societe Honeywell Bull (Societe Anonyme): *See—*
Siegel, Pierre Louis; and Delorme, Raymond Louis, 3,811,609.
Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
Rousseau, Hubert Cecyl Albert; and Brette, Yves-Jean Francois, 3,812,534.
Soliman, Georges; and Personnaz, Leon Felix, 3,812,460.
Venker, Hilrich Jan Matthijs, 3,812,495.
Societe Nationale d'Etude & de Construction de Moteurs d'Aviation (snecma): *See—*
Lescop, Pierre; Michel, Pierre; and Vigneau, Joel Olivier, 3,811,919.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Caruel, Jacques Emile Jules; Quillevere, Herve Alain; Castellant, Jean-Pierre Jules Emile; and Lacroix, Armand Jean-Baptiste, 3,811,276.
Soichet, Samuel. Intrauterine device and injection machanism. 3,811,435, Cl. 128-130.000.
Sokol, Vincent G. Disposable dilution system. 3,811,326, Cl. 73-425.40p.
Solartron Electronic Group Limited, The: *See—*
Parmenter, George Shearer, 3,812,439.

Soliman, Georges; and Personnaz, Leon Felix, to Societe Industrielle Honeywell Bull (Societe Anonyme). Read-head for an optical character-recognition system. 3,812,460, Cl. 340-146.3ma.

Sondheimer, Allen J., to United States of America, Navy. Encapsulated torpedo mine weapon system. 3,811,379, Cl. 102-13.000.

Sony Corporation: *See—*
Narahara, Hisaaki, 3,812,523.
Sato, Shuichi; and Yamaguchi, Tadanori, 3,812,517.

Sorensen, Donald E. Lock for sliding doors. 3,811,302, Cl. 70-100.000.

Sosjurko, Vladimir Georgievich: *See—*
Vydrin, Vladimir Nikolaevich; Ageev, Leonid Matveevich; and Sosjurko, Vladimir Georgievich, 3,811,307.

Southwire Company: *See—*
Schoerner, Roger J.; and Chia, Enrique C., 3,811,846.
Ward, George C., 3,811,492.

Southworth, Richard Alvin, to International Business Machines Corporation. Synchronized static mosfet latch. 3,812,388, Cl. 307-291.000.

Sowell, John B., mesne: *See—*
Enderlein, Hans Dieter Friedrich Konrad, 3,811,825.
Enderlein, Hans Dieter Friedrich Konrad, 3,811,826.

Spayd, Richard W.: *See—*
Babbitt, John M.; Spayd, Richard W.; and Irani, Nayyir F., 3,811,897.

Spectrospin AG: *See—*
Tschopp, Werner Heinz, 3,812,418.

Speer, Rolland Orin. Process and apparatus for separation of mineral ore from gangue material. 3,811,623, Cl. 241-1.000.

Speirs, Kenneth K.: *See—*
Weinstein, Martin; Speirs, Kenneth K.; and Baer, Robert B., 3,811,959.

Sperry, Philip R.: *See—*
Caule, Elmer J.; Sperry, Philip R.; Pryor, Michael J.; and Ford, James A., 3,811,874.

Sperry Rand Corporation: *See—*
Cronson, Harry M.; and Mitchell, Peter G., 3,812,423.
Finnin, George R., 3,812,471.
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,811,584.
Lahti, Archie E.; and McBresth, Donald G., 3,812,463.

Spiegelberg, Hans: *See—*
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,812,129.

Spietschka, Ernst: *See—*
Landler, Josef; and Spietschka, Ernst, 3,812,130.

Spinks, Ralph William, to Girling Limited. Vehicle suspension units. 3,811,664, Cl. 267-66.000.

Sporlan Valve Company: *See—*
Hoffman, John E., 3,811,837.

Sprague Electric Company: *See—*
Maher, Galeb H., 3,811,937.

Sprain, Edward F. Combustion engine apparatus having compossion cylinders and power cylinders. 3,811,271, Cl. 60-39.600.

Spring Chemicals Limited: *See—*
Robinson, Murry Clinton, 3,812,235.

Sprouse, Danny H.; and Sprouse, Muriel K. Game with magnetic extraction of counters. 3,811,681, Cl. 273-139.000.

Sprouse, Muriel K.: *See—*
Sprouse, Danny H.; and Sprouse, Muriel K., 3,811,681.

Square D Company: *See—*
Cook, David Langman, 3,812,440.
Kiessling, Rudolf H., 3,812,453.

Squibb, E. R., & Sons, Inc.: *See—*
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., 3,812,092.
Breuer, Hermann, 3,812,100.
Krapcho, John, 3,812,114.
Lee, Bong Kuk; Ryu, Dewey D. Y.; Miraglia, Gennaro John; Basch, Harold I.; and Mukherjee, Barid B., 3,812,110.
Ondetti, Miguel A., 3,812,091.

Squillace, Anthony S.; Martin, Albert E.; and Rudmann, Jerald J., to North American Rockwell Corporation. Silicon nitride-silicon oxide etchant. 3,811,974, Cl. 156-8.000.

Stache, Ulrich; Radscheit, Kurt; Firtsch, Werner; and Haede, Werner, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3Beta-hydroxy-5alpha-cardenolides and -bufadienolides and process for their manufacture. 3,812,106, Cl. 260-239.50.

Stack, Roy E., to PPG Industries, Inc. Process for polymerizing vinyl chloride. 3,812,086, Cl. 260-87.100.

Stafford, Lawrence R. Rope grab assembly. 3,811,155, Cl. 24-126.00r.

Stalter, Neil J., to Du Pont de Nemours, E. I., and Company. Stabilized hydrogen peroxide compositions containing ammonium ions, and process for bleaching therewith. 3,811,833, Cl. 8-111.000.

Stamenkovic, Hrista. Means for fatigue proofing a solid rotary shaft. 3,811,295, Cl. 64-1.00v.

Standard Hydraulics Service, Inc.: *See—*
Woods, James F.; and Kerns, Gary Paul, 3,811,571.

Standard Oil Company: *See—*
Wennerberg, Arnold N.; and Frazier, Alvin W., 3,812,028.

Standard Oil Company, The: *See—*
Adams, Harry A.; Kunchal, Kumar; and Callahan, James L., 3,812,236.
Metcalfe, Joseph E., III; Rightmire, Robert A.; and Marse, Allan V., 3,811,947.

Stanley, G. M., & Co., Inc.: *See—*
Goldman, Stanley M., 3,811,521.

Stanley, John H.: *See—*
Taylor, Challen E.; and Stanley, John H., 3,811,659.

Starer, Ira; Montgomery, Carroll Sherman; and O'Bara, Edward John, to American Cyanamid Company. Novel process for preparing 6-halo-3-methylphenols. 3,812,194, Cl. 260-623.00r.

Statni vyzkumny ustav textilni: *See—*
Peschl, Ervin; Zmatlik, Josef; Sedlecky, Jaromir; and Kolar, Vladimir, 3,811,299.

Stauffer Chemical Company: *See—*
Gaughan, Edmund J., 3,812,117.
Teach, Eugene G., 3,812,160.

Stedman, James K., to United Aircraft Corporation. Venturi tube regulator for a fuel cell. 3,811,951, Cl. 136-86.00b.

Stedtnitz, Wolfgang, to Bosch, Robert, GmbH. Non-contacting electrical rotary position and rotation transducer. 3,812,481, Cl. 340-196.000.

Steele, Bernard Robert, to United Kingdom Atomic Energy Authority. Production of porous ceramic nuclear fuel employing dextrin as a volatile pore-former. 3,812,050, Cl. 252-301.10r.

Stefani, Joseph P., to General Electric Company. Be-cu contact for nema outlet. 3,812,445, Cl. 339-32.00r.

Stefek, Oldrich; Triska, Vojtech; and Bednar, Ladislav, to Nova Hut Klementa Gottwalda narodni podnik. Apparatus for turning pipes between rolling passes. 3,811,310, Cl. 72-252.000.

Steinbeck, Hermann: *See—*
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, 3,812,165.
Wiechert, Rudolf; and Steinbeck, Hermann, 3,812,166.

Stepniczko, Heintich E.: *See—*
Dipietro, Joseph; and Stepniczko, Heintich E., 3,811,839.

Sterlini, Jacques: *See—*
06/21/74; and Sterlini, Jacques, 3,811,663.

Sternbach, Leo Henryk: *See—*
Metlesics, Werner; and Sternbach, Leo Henryk, 3,812,103.
Metlesics, Werner; and Sternbach, Leo Henryk, 3,812,143.

Stewart, Edward F., to International Telephone and Telegraph Corporation. Differential loop current detector. 3,812,303, Cl. 179-175.30r.

Stewart, James R., to GTE Lenkurt Incorporated. Slidable door fastener for weatherproof housing. 3,811,225, Cl. 49-463.000.

Stewart, Merlin D. Musical instrument support. 3,811,357, Cl. 84-327.000.

Stibbs, Donald; Thompson, Raymond; and Young, Oswald William John, to United States Borax & Chemical Corporation. Inhibiting grain-growth in ceramic materials. 3,811,899, Cl. 106-43.000.

Stielau, Robert W.: *See—*
Douglas, Frank C.; Gregory, Thomas K.; and Stielau, Robert W., 3,811,940.

Stock Equipment Company: *See—*
Lasky, Ronald J., 3,812,429.

Stockdale, George Fairbank: *See—*
Carlson, David Emil; Hang, Warren Kenneth; and Stockdale, George Fairbank, 3,811,855.

Stoddard, William H., Jr.: *See—*
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,811,184.

Stoeberl, Hermut. Boat hull and deck assembly. 3,811,141, Cl. 9-6.000.

Stoff, Werner, to Ge-Na-Geschenke Gebr. Nagel KG. Thermally actuated mobile. 3,811,990, Cl. 161-12.000.

Stolle Corporation, The: *See—*
Close, Frederick J., 3,811,393.

Stone, Albert E., to Honeywell Inc. Ultrasonic strain transducing system. 3,812,345, Cl. 246-249.000.

Stone, Herman; Robertson, Arthur B.; and Tetenbaum, Marvin T., to Allied Chemical Corporation. Smoke suppressants for copolymers of ethylene and chlorotrifluoroethylene. 3,812,066, Cl. 260-23.0xa.

Stone, Wayne B., Jr.; and Beaumont, Alan, to Indexette Tapers, Inc. Transversely banded film for making edge marked magnetic tape. 3,812,538, Cl. 360-134.000.

Stookey, Stanley D.: *See—*
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.

Stoy, Artur, to Ceskoslovenska akademic ved. Method of manufacturing hydrogels. 3,812,071, Cl. 260-29.6ta.

Strabag Beu-A.G.: *See—*
Feiner, Alfred, 3,811,286.

Strachan & Henshaw Limited: *See—*
Sheppard, Gilbert Leslie, 3,811,580.

Street, Frederick G. Cube forming disc puzzle. 3,811,683, Cl. 273-157.00r.

Strickler, Charles J.; and Hammond, Aubrey J., to United States of America, Navy, mesne. Highly loaded cast polyurethane propellants containing aluminum. 3,811,967, Cl. 149-19.400.

Stuart, Douglas, to Carron Hydraulics Limited. Fluid power transmission and control system for fluid motors for driving the front wheels of a vehicle. 3,811,525, Cl. 180-44.00m.

Studinka, Josef: *See—*
Gabler, Rudolf; and Studinka, Josef, 3,812,192.

Stumpf, Frederick: *See—*

Wagensonner, Edward; Borowski, Jurt; and Stumpf, Frederick, 3,812,504.
Sturm, Hans-Dieter: *See*—
Honold, Ernst; Hubner, Werner; and Sturm, Hans-Dieter, 3,811,687.
Sturm, Hermann, to Bach & Co. Contact spring for plug connectors. 3,812,452, Cl. 339-258.00r.
Sugahara, Eisuke, to Nippon Piston Ring Co., Ltd. Piston ring having peripheral groove. 3,811,691, Cl. 277-224.000.
Suggitt, Robert M.; and Crone, John M., Jr., to Texaco Inc. Method for disproportionating hydrocarbons. 3,812,197, Cl. 260-672.00t.
Sugita, Sadao: *See*—
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,811,887.
Sukatsch, Dieter: *See*—
Buschmann, Lothar; Prave, Paul; and Sukatsch, Dieter, 3,812,012.
Sullivan, Francis R.: *See*—
Clovis, James S.; and Sullivan, Francis R., 3,812,219.
Sulzer Brothers Ltd.: *See*—
Vogeli, Ernsy, 3,811,279.
Sumitomo Chemical Company, Limited: *See*—
Ito, Ikoh; Sekihara, Takeshi; Emura, Tomoyuki; and Ueda, Takeshi, 3,812,073.
Sumitomo Chemical Company, Ltd.: *See*—
Ishizumi, Kikuo; Mori, Kazuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,102.
Kimura, Michio; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,112.
Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,135.
Tsuchiya, Hiroshi, 3,812,223.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,118.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.
Sun Oil Company of Pennsylvania: *See*—
Grey, Edward H.; and Shufelt, Robert C., 3,812,200.
Sun Research and Development Company: *See*—
Hedge, John A., 3,812,198.
Hollstein, Elmer J.; and Butte, Walter A., Jr., 3,812,148.
Hollstein, Elmer J., 3,812,149.
Neikam, William C.; and James, Robert L., 3,812,171.
Sunbeam Corporation: *See*—
Viecceli, Joseph L.; and Williams, James T., 3,811,208.
Sundermann, Erich; and Viedt, Johanna, said Sundermann assor. to Dolle, Waldemar. Apparatus for manufacturing of bodies of bulking clay. 3,811,815, Cl. 425-446.000.
Surette, Philip A.: *See*—
Trussell, Donald H.; and Surette, Philip A., 3,811,284.
Survival Technology, Inc.: *See*—
Sarnoff, Stanley J., 3,811,441.
Suter, Hans; Zutter, Hans; and Muller, Hans Rudolf, to Eprova Aktiengesellschaft. Water-soluble, nonionic iodomethanesulfonamide derivatives opaque to X-rays. 3,812,186, Cl. 260-556.00a.
Suzuki, Takami; and Matsuhisa, Koh, to Ricoh Co., Ltd. Mechanical printer. 3,811,546, Cl. 197-18.000.
Svenska Rotor Maskiner Aktiebolag: *See*—
Schibbye, Laurtiz Benedictus, 3,811,291.
Swaney, Larry R., to PPG Industries, Inc. Preparation of submicron titanium carbide. 3,812,239, Cl. 423-440.000.
Swartzman, Bernard A. Demonstration typewriter keyboard wall chart. 3,812,277, Cl. 35-6.000.
Swenson, George H., to Hersey Products Inc. Liquid meter. 3,811,323, Cl. 73-231.00r.
Swenson, William J., to Offshore Company, The. Method and apparatus for monitoring return mud flow. 3,811,322, Cl. 73-155.000.
Swidler, Ronald: *See*—
Gamarra, Jose P.; Swidler, Ronald; and Wilson, Katherine W., 3,811,131.
Swift, Frank C.; deceased (by Swift, Viola; executrix), to Swift, Viola. Valve stem height gauge. 3,811,194, Cl. 33-181.0at.
Swift, Viola: *See*—
Swift, Frank C., 3,811,194.
Swinehart, Bruce A.: *See*—
Bartholomew, Roger F.; Campbell, Donald E.; Dates, Harold F.; Lewek, Stanley S.; Marusak, Francis J.; Pierson, Joseph E.; Stookey, Stanley D.; and Swinehart, Bruce A., 3,811,853.
Swisher, Daniel G.: *See*—
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.
Switches, Incorporated: *See*—
Wolf, Walter A.; Corn, Prentice R.; and Gebhardt, Wallace A., 3,812,313.
Swoager, Jon R., to Automation Equipment, Inc. Multi-purpose vehicle for use underground. 3,811,290, Cl. 61-63.000.
Sylvestre-Baron, Martial: *See*—
Bertrand, Gerard; Perroud, Paul; and Sylvestre-Baron, Martial, 3,812,026.
Symons, Philip C.: *See*—
Creutz, Hans-Gerhard; Romanowski, Edward A.; and Symons, Philip C., 3,811,946.
Syntex (U.S.A.) Inc.: *See*—
Moffatt, John G.; and Russell, Alan F., 3,812,098.
Szabo, Louis R.; and Lazarus, Martin, to United States of America, Army. Novel ICI corrected phototransducer for measuring light output of photoflash items. 3,812,350, Cl. 250-226.000.
Taccone, Russell William, to Combustion Engineering, Inc. Briquetting press. 3,811,813, Cl. 425-252.000.
Taguchi, Seiichi: *See*—
Tamai, Yasuo; Taguchi, Seiichi; Yamada, Kiyoshi; and Yamamoto, Nobuo, 3,812,037.
Takada, Koji: *See*—
Takeyama, Hidehiko; and Takada, Koji, 3,812,376.
Takagi, Hiromu: *See*—
Iwai, Issei; Ohki, Eiji; Oida, Sadao; Takagi, Hiromu; and Ohashi, Yoshihiko, 3,812,134.
Takahashi, Keiichi, to Tokan Kogyo Company Limited. Method for continuously making a hollow board article of thermoplastic resin. 3,812,230, Cl. 264-89.000.
Takahashi, Takeshi: *See*—
Sato, Hiroshi; Nishio, Daijiro; and Takahashi, Takeshi, 3,812,145.
Takami, Fumitaka: *See*—
Tanaka, Hozumi; Ikawa, Kenji; and Takami, Fumitaka, 3,812,124.
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, to Fujisawa Pharmaceutical Co., Ltd. 7-Acylated 3-substituted cephalosporin compounds. 3,812,116, Cl. 260-243.00c.
Takayama, Masao: *See*—
Shimizu, Munetaka; and Takayama, Masao, 3,812,512.
Takeda Chemical Industries, Ltd.: *See*—
Masuda, Katsutada; and Imashiro, Yoshio, 3,812,128.
Mima, Hiroyuki; and Matsuzaki, Toichiro, 3,812,251.
Tomita, Akio; Karitani, Tadakazu; and Ohtsuki, Takashi, 3,811,567.
Takeuchi, Shizuka: *See*—
Murase, Yasuo; and Takeuchi, Shizuka, 3,811,471.
Takeuchi, Yoshihiro: *See*—
Yamanaka, Izumi; Sato, Hironobu; and Takeuchi, Yoshihiro, 3,811,615.
Takeyama, Hidehiko; and Takada, Koji, to Industrial Science & Technology, Agency of. Device for controlling dimensional accuracy during machining of a cylindrical workpiece. 3,812,376, Cl. 250-572.000.
Takimoto, Yasuyuki; and Yoshikawa, Toshikazu, to Nippon Paint Co., Ltd. Plastic matrix and resin composition used for preparing same. 3,812,078, Cl. 260-42.290.
Takman, Bertil H.: *See*—
Adams, Herbert J. F.; Kronberg, George H.; and Takman, Bertil H., 3,812,147.
Talko, Francis: *See*—
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., 3,811,936.
Tamai, Yasuo; Taguchi, Seiichi; Yamada, Kiyoshi; and Yamamoto, Nobuo, to Xerox Corporation. Liquid developer composition. 3,812,037, Cl. 252-62.100.
Tamny, Simon Z.: *See*—
Reighard, Alan B.; and Tamny, Simon Z., 3,811,601.
Tamura, Masaharu: *See*—
Kobayashi, Kengo; Hattori, Seiichi; and Tamura, Masaharu, 3,811,345.
Tamura, Setsuo: *See*—
Inaba, Shin-Ichi; Okimoto, Ken-Ichi; Tamura, Setsuo; and Uenaka, Toshiyuki, 3,811,868.
Tan, Sing Liong, to U.S. Philips Corporation. Low light level television camera. 3,812,526, Cl. 358-42.000.
Tanaka, Hozumi; Ikawa, Kenji; and Takami, Fumitaka, to Shionogi & Co., Ltd. Method for preparing thiamine salts. 3,812,124, Cl. 260-256.600.
Tanaka, Kano: *See*—
Inoue, Mutsuhiro; and Tanaka, Kano, 3,812,327.
Tanaka, Masao: *See*—
Sakamoto, Michio; and Tanaka, Masao, 3,812,441.
Tancredi, Andrew J. Reinforcing band strip. 3,811,565, Cl. 206-478.000.
Tarkenton, Ernest L., to Harsco Corporation. Multiple concrete to plastic pipe adapter. 3,811,711, Cl. 285-110.000.
Tarman, Paul B.: *See*—
Massey, Lester G.; Tarman, Paul B.; and Huebler, Jack, 3,812,048.
Tarnavsky, Abram Lvovich; and Goloveev, Nail Khabibrakhmanovich. Method for the manufacture of cored wire. 3,811,178, Cl. 29-517.000.
Tashiro, Kijuro; Yokoyama, Masuzo; and Kitazume, Shoji, to Mitsubishi Petrochemical Company Limited. Production of olefin polymers. 3,812,089, Cl. 260-93.700.
Tate, Raymond F. Multi-purpose picture frame. 3,811,214, Cl. 40-152.000.
Tatsuno, Hiyoshi. Semi-automatic type register apparatus for use at a gasoline service station. 3,812,329, Cl. 235-92.0fl.
Tatterson, Benjamin F., to Koppers Company, Inc. Pollution control system. 3,811,572, Cl. 210-152.000.

Tatzel, Hermann; and Beck, Gilbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of foam plastics from high molecular weight olefin polymers. 3,812,062, Cl. 260-2.50e.

Taya, Shunroku: *See—*
Mitani, Eisuke; Tsuyama, Hitoshi; Itoh, Michiyasu; and Taya, Shunroku, 3,812,356.

Taylor, Challen E.; and Stanley, John H., to Goodyear Tire & Rubber Company, The. Arched strainer plate for plastic and like material. 3,811,659, Cl. 259-193.000.

Taylor, Herbert L.: *See—*
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., 3,811,936.

Taylor, Jack Rogers; and Du Bell, Thomas Loyd, to General Electric Company. Fuel injection apparatus. 3,811,278, Cl. 60-39.74r.

Taylor, John E., Jr.: *See—*
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.

Taylor, Paul Franklin. Process for class IV B metals ore reduction. 3,811,871, Cl. 75-84.000.

Taylor, William, to Ebco Manufacturing Company. Cooler and faucet-equipped beverage containers. 3,811,294, Cl. 62-390.000.

Teac Corporation: *See—*
Yoichi, Tsuchiya, 3,812,529.

Teach, Eugene G., to Stauffer Chemical Company. Bis-meta-phenylene ureas. 3,812,160, Cl. 260-347.300.

Teche, Andre: *See—*
Bertin, Daniel; Perronnet, Jacques; and Teche, Andre, 3,811,863.

Technar, Incorporated: *See—*
Bell, Lon E.; and Gruber, William B., 3,812,308.

Technicon Instruments Corporation: *See—*
Diebler, Herman G.; Gyori, Steven Andrew; and McCandless, William J. C., 3,811,842.
Kassel, Aaron, 3,811,841.

Technofil S.p.A.: *See—*
Pietroni, Piero, 3,811,312.

Telco (Group Management) Limited: *See—*
Telco, Paul, 3,811,373.

Telco, Paul, to Telco (Group Management) Limited. Beverage making device. 3,811,373, Cl. 99-295.000.

Telesco Brophey, Limited: *See—*
Thur, Klaus, 3,811,455.

Tell, Karl Gunnar: *See—*
Siwersson, Olle Lennart; and Tell, Karl Gunnar, 3,811,952.

Tenneco Chemicals, Inc.: *See—*
Minieri, Pasquale P., 3,812,065.

Tension Structures Co.: *See—*
Huddle, Carl F., 3,811,454.

Tesainer, Silvano: *See—*
Wilkinson, Michael C.; Blais, Leo; Martin, Wilhelm N.; and Tesainer, Silvano, 3,811,987.

Tessera, Giancarlo: *See—*
Collina, Giancarlo L.; and Tessera, Giancarlo, 3,812,464.

Tetenbaum, Marvin T.: *See—*
Stone, Herman; Robertson, Arthur B.; and Tetenbaum, Marvin T., 3,812,066.

Texaco Inc.: *See—*
Burnett, David B.; Alston, Robert B.; and Lim, Frank H., 3,811,501.
Burnett, David B., 3,811,502.
Burnett, David B.; and Lim, Frank H., 3,811,503.
Carlin, Joseph T., 3,811,506.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,504.
Flournoy, Kenoth H.; Cardenas, Ricardo L.; Haferkamp, Gilbert L.; and Shupe, Russell D., 3,811,505.
Flournoy, Kenoth H.; and Shupe, Russell D., 3,811,507.
McCoy, Frederic C.; and Schlicht, Raymond C., 3,812,031.
Suggitt, Robert M.; and Crone, John M., Jr., 3,812,197.

Texas Instruments Incorporated: *See—*
Cragon, Harvey G., 3,812,476.
Garth, Emory C., 3,812,402.

Texon Inc.: *See—*
Schortmann, Walter E.; and Derose, Michael A., 3,812,006.

Thauer, Peter: *See—*
Gospodar, Reinhard; Reichel, Kurt; Vogelsang, Gustav; and Thauer, Peter, 3,811,416.

Thawley, Clive S., to Uniroyal Limited. Buoyant liquid-conveying hose. 3,811,477, Cl. 138-103.000.

Theil, Sven E., to Smidth, F. L., & Co. Cooler tubes for rotary kiln. 3,811,824, Cl. 432-80.000.

Theissen, Robert J., to Mobil Oil Corporation. 2-Nitro-5-(halophenoxy)benzoyl chlorides. 3,812,184, Cl. 260-544.00m.

Thelemaque, Louis Emanuel: *See—*
Dittrich, Robert George; Secord, Dean Brian; and Thelemaque, Louis Emanuel, 3,812,298.

Theriot, Joseph G. Well test burner. 3,811,820, Cl. 431-354.000.

Thies, Peter Willibrord, to Kali-Chemie Aktiengesellschaft. Dioxatricyclodecanes. 3,812,154, Cl. 260-340.300.

Tholander, Lars Helge; and Thostrup, Harry, to Elektriska Svetsningsaktiebolaget. Welding guns. 3,811,611, Cl. 226-178.000.

Thoma, Nandor G.: *See—*
Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., 3,811,182.

Thomas & Betts Corporation: *See—*
Haitmanek, Louis F., 3,812,448.

Thommen, Hans: *See—*
Chodnekar, Madhukar S.; Thommen, Hans; and Schwieter, Ulrich, 3,812,262.

Thompson, Arnold M. Pneumatic cleaning, disinfecting and oiling device for a tube-type dental handpiece. 3,811,408, Cl. 188-73.000.

Thompson, Christopher J. C.: *See—*
Meier, Rudolf H.; Day, Richard P.; and Thompson, Christopher J. C., 3,812,359.

Thompson, Howard G.; and Kay, John A., Jr., to Massey-Ferguson Inc. Folding wing lock. 3,811,516, Cl. 172-311.000.

Thompson, Raymond: *See—*
Stibbs, Donald; Thompson, Raymond; and Young, Oswald William John, 3,811,899.

Thomson-CSF: *See—*
Rougeot, Henri, 3,812,369.

Thornton, Ronald W.: *See—*
Thornton, Theodore Wayne; and Thornton, Ronald W., 3,811,589.

Thornton, Theodore Wayne; and Thornton, Ronald W. Child-resistant container assembly and components thereof. 3,811,589, Cl. 215-9.000.

Thostrup, Harry: *See—*
Tholander, Lars Helge; and Thostrup, Harry, 3,811,611.

Throckmorton, Thomas Marvin; and Crawford, Charles M., III, to Metropolitan Watersaving Co., Inc. Water saving attachments for toilet gravity flush tanks. 3,811,134, Cl. 4-18.000.

Throner, Guy C., Jr.: *See—*
Fichter, Arthur A., Jr.; Danks, Ronald D.; Larsen, Farrell G.; and Throner, Guy C., Jr., 3,811,381.

Thun, Leonard; and Grebow, Leon David, to AcRite Industries, Inc. Bifold door system. 3,811,489, Cl. 160-118.000.

Thur, Klaus, to Telesco Brophey, Limited. Telescopic umbrella stick. 3,811,455, Cl. 135-46.00t.

Tikijian, George Haig: *See—*
Linn, Thomas Daniel; Klauser, John George; Jordan, Alexander; and Tikijian, George Haig, 3,812,474.

Timken Company, The: *See—*
Wren, Frederick James, 3,811,743.
Wren, Frederick James; Instone, Eric Frank; Hunt, John Oliver Alfred; and Wright, Alan John, 3,811,744.

Tink, Robert MacMillan; and Baker, Bob Jim, to National Cash Register Company, The. Digital communication system. 3,812,292, Cl. 179-2.0dp.

Tinney, John R.: *See—*
Marchant, John C.; and Tinney, John R., 3,811,885.

Tipaine, Wiya Aleksandrowna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

Tischer, Ragnar P.: *See—*
Minck, Robert W.; and Tischer, Ragnar P., 3,811,943.

Tkacenko, Nikola B., to Sarkes Tarzian, Inc. Rotary special effects generator. 3,812,286, Cl. 178-6.800.

Toffano, Silvio: *See—*
Natta, Giulio; Beati, Enrico; Severini, Febo; and Toffano, Silvio, 3,812,204.

Toiseux, Pierre, to Ronson Societe Anonyme. Modular gas lighter with electronic ignition. 3,811,819, Cl. 431-255.000.

Tokan Kogyo Company Limited: *See—*
Takahashi, Keiichi, 3,812,230.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,812,519.

Toland, William G.: *See—*
Lapporte, Seymour J.; and Toland, William G., 3,812,176.

Tolley, James H.: *See—*
Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., 3,811,182.

Tomisawa, Norio; Amano, Takehisa; Uchiyama, Yasuji; and Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Semiconductor storage device. 3,812,478, Cl. 340-173.00r.

Tomita, Akio; Karitani, Tadakazu; and Ohtsuki, Takashi, to Takeda Chemical Industries, Ltd. Apparatus for inspection of ampoules. 3,811,567, Cl. 209-73.000.

Tomlinson, Roy, to Connollys (Blackley) Ltd. Apparatus for impregnating and coating stranded bodies. 3,811,406, Cl. 118-6.000.

Torgow, Abraham M. Projector, field, and targets. 3,811,675, Cl. 273-101.000.

Toshiba Machine Co., Ltd.: *See—*
Nagashima, Kazuo; and Ono, Tadahiro, 3,811,228.

Townsend, Charles E., Jr. Headwear construction. 3,811,130, Cl. 2-177.000.

Toyoda Automatic Loom Works, Ltd.: *See—*
Murase, Yasuo; and Takeuchi, Shizuka, 3,811,471.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakamura, Akira; Arai, Hiroshi; and Ohta, Jun, 3,811,739.
Sato, Kiyoomi; and Ishidera, Takashi, 3,811,545.

Tramposch, Herbert, to Pitney-Bowes, Inc. Credit card. 3,812,328, Cl. 235-61.12n.

Trane Company, The: *See—*

Mikulina, Thomas W.; Lievens, Ronald J.; and Brockman, George T., 3,811,790.

Trbovich, Nicholas D.; Robinson, William P.; and Trunzo, Eugene R., said Robinson and said Trunzo assors to Servotronics, Inc. Simulated basketball game. 3,811,674, Cl. 273-85.00e.

Tredway, Wynn B., Sr. Golf seing training glove including light projecting device. 3,811,684, Cl. 273-183.00b.

Trenkler, Gerhard, to Licentia Potent-Verwaltungs-GmbH. 3,812,428, Cl. 324-127.000.

Treuthart, Robert L., to Rockwell International Corporation. Optical scanner. 3,811,748, Cl. 350-7.000.

Tri-Way Industries, Inc.: *See—*
Del Missier, Richard J., 3,811,138.

Triatex International AG. fur Textile Forschung Entwicklung: *See—*
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,811,834.

Triska, Vojtech: *See—*
Stefek, Oldrich; Triska, Vojtech; and Bednar, Ladislav, 3,811,310.

Troster, Helmut: *See—*
Merkle, Kurt; Fuchs, Otto; Troster, Helmut; and Noetzel, Siegfried, 3,812,051.

Trunzo, Eugene R.: *See—*
Trbovich, Nicholas D.; Robinson, William P.; and Trunzo, Eugene R., 3,811,674.

Trussell, Donald H.: *See—*
Trussell, Donald H.; and Surette, Philip A. (said Surette assor. to said), 3,811,284.

Trussell, Donald H.; and Surette, Philip A., said Surette assor. to said Trussell, Donald H. Control system. 3,811,284, Cl. 60-533.000.

Truth Incorporated: *See—*
Bates, Wayne C., 3,811,718.

TRW Inc.: *See—*
Bhuta, Pravin G.; Johnson, Robert L.; Aprahamian, Robert; and Jacoby, Jerold L., 3,812,454.
Brenneke, Arthur M., 3,811,692.
Brook, Robert E., 3,812,496.
Jones, Robert J., 3,812,082.
Jones, Robert J.; and Burns, Eugene A., 3,812,083.
Lubowitz, Hyman R., 3,812,159.

Tryhorn, Donald Wilfred, to Armstrong, W. G., Sir, Whitworth & Company (Engineers) Limited. Rotary compressing, displacing or expanding machine. 3,811,807, Cl. 418-227.000.

Tschopp, Werner Heinz, to Spectrospin AG. Device for the excitation of spin resonances by means of an RF signal having a prescribed amplitude function. 3,812,418, Cl. 324-.50r.

Tsuboka, Eiichi: *See—*
Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, 3,812,488.

Tsuchiya, Hiroshi, to Sumitomo Chemical Company, Ltd. Process for producing thio- or dithio-phosphoric acid salts. 3,812,223, Cl. 260-987.000.

Tsuji, Nobuo: *See—*
Okutsu, Toshimitsu; Tsuji, Nobuo; Ohi, Reiichi; and Kondo, Tokiharu, 3,812,079.

Tsujimoto, Kayoshi: *See—*
Hayashi, Toshio; Yoshizaki, Akira; and Tsujimoto, Kayoshi, 3,812,499.

Tsuyama, Hitoshi: *See—*
Mitani, Eisuke; Tsuyama, Hitoshi; Itoh, Michiyasu; and Taya, Shunroku, 3,812,356.

Tsuyama, Naoto: *See—*
Okada, Shigetaka; and Tsuyama, Naoto, 3,812,011.

Tucker, Raymond Z.; and Benson, Jack O., to Schatt Industries, Inc. Trailer hitch. 3,811,706, Cl. 280-407.000.

Tucker, Stuart G., to International Business Machines Corporation. Storage system with conflict-free multiple simultaneous access. 3,812,473, Cl. 340-172.500.

Tuhro, Richard H., to Computer Identics Corporation. Specular reflection suppression apparatus. 3,812,374, Cl. 250-568.000.

Tull Aviation Corporation: *See—*
Coulter, J. Roland, 3,812,427.

Tull, Roger J.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,812,182.

Turkovich, Frank D., to Chrysler Corporation. Safety belt protector. 3,811,703, Cl. 280-150.0sb.

Turnbull, Charles H., to Chesbrough-Pond's Inc. Container for forced expiration exercises. 3,811,671, Cl. 272-57.00f.

Twigg, Peter Lindsay: *See—*
Parry, Philip James; and Twigg, Peter Lindsay, 3,811,960.

Tykachinsky, Isai Davidovich: *See—*
Bondarev, Konstantin Timofeevich; Pavlushkin, Nikolai Mikheevich; Tykachinsky, Isai Davidovich; Kozlovsky, Viktor Stepanovich; Oblasti, Dolgoprudny Moskovskoi; Krylov, Valentin Feoktistovich; and Rud, Svetlana Ivanovna, 3,811,852.

Tykva, Richard, to Ceskoslovenska akademie ved. Method and arrangement for determination of planar distribution of low-energy beta nucleides and other radionucleides for tracer experiments in biological, biochemical and chemical experimental systems. 3,812360, Cl. 250-370.000.

Tyssee, Donald A.: *See—*
Petrovich, John P.; and Tyssee, Donald A., 3,812,190.

UA Engineering Limited: *See—*
Usborne, Andrew Charles, 3,811,397.

Uchiyama, Masao; and Kaneko, Norio, to Mitsubishi Petrochemical Company, Limited. Catalytic steam dealkylation. 3,812,196, Cl. 260-672.000.

Uchiyama, Yasuji: *See—*
Tomisawa, Norio; Amano, Takehisa; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,812,478.

Ueda, Hirozo: *See—*
Ohta, Noboru; Oishi, Yasushi; and Ueda, Hirozo, 3,811,890.

Ueda, Takeshi: *See—*
Ito, Ikoh; Sekihara, Takeshi; Emura, Tomoyuki; and Ueda, Takeshi, 3,812,073.

Uenaka, Toshiyuki: *See—*
Inaba, Shin-Ichi; Okimoto, Ken-Ichi; Tamura, Setsuo; and Uenaka, Toshiyuki, 3,811,868.

Uffner, Melville W.; and Holland, Dewey G., to Air Products and Chemicals, Inc. Oil and grease resistant paper products and process for treating cellulosic materials. 3,811,933, Cl. 117-155.0ua.

Uhde, Friedrich, GmbH: *See—*
Peters, Henning, 3,812,090.

Ultronic Systems Corporation: *See—*
Rich, Barry S., 3,812,466.

Umemura, Sumio: *See—*
Happel, John; and Umemura, Sumio, 3,812,175.

Unger, Burton Abram: *See—*
Lesh, Nathan George; O'Day, Peter Joseph; and Unger, Burton Abram, 3,811,973.

Unimac Company, Inc.: *See—*
Barton, Henry W.; and Cloud, Robert, 3,811,300.

Union Carbide Corportion: *See—*
Linn, Thomas Daniel; Klauser, John George; Jordan, Alexander; and Tikijian, George Haig, 3,812,474.

Union Sils van de Loo & Co.: *See—*
Konzorr, Hubert, 3,811,339.

Unipas, Inc.: *See—*
Lathers, Paul Anthony, 3,811,394.

Uniroyal, Inc.: *See—*
Bolesky, Richard C., 3,811,721.
Clarkson, Robert J., 3,811,262.
Faress, Sidney M., 3,811,164.

Uniroyal Limited: *See—*
Thawley, Clive S., 3,811,477.

United Aircraft Corporation: *See—*
Amelio, Armand F., 3,811,254.
Bacon, James F., 3,811,901.
Calderon, Henry A., 3,811,274.
Douglas, Frank C.; Gregory, Thomas K.; and Sticlau, Robert W., 3,811,940.
Galasso, Francis S.; and Jacob, Bernarr A., 3,811,920.
Kuehl, Donald K.; Fanti, Roy; and Galasso, Salvatore F., 3,811,930.
Markawski, Stanley J., 3,811,277.
Martin, Anthony N., 3,811,273.
Stedman, James K., 3,811,951.

United Corporation: *See—*
Elliott, James B., 3,812,505.

United Fabricating Company, Inc., mesne: *See—*
Bettinger, James H., 3,811,237.

United Kingdom Atomic Energy Authority: *See—*
Henney, John William; and Jones, James William Samuel, 3,811,928.
Steele, Bernard Robert, 3,812,050.

United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Banks, Ronald Eric; and Haszeldine, Robert Neville, 3,812,206.

United States Borax & Chemical Corporation: *See—*
Stibbs, Donald; Thompson, Raymond; and Young, Oswald William John, 3,811,899.

United States of America
: *See—*
Olson, Donald R., 3,811,422.
Agriculture: *See—*
Cashen, Norton A.; Kullman, Russell M. H.; and Reinhardt, Robert M., 3,811,210.
Weaver, Merle L.; Hautala, Earl; and Nonaka, Masahide, 3,812,274.
Army: *See—*
Bald, James F., Jr., 3,811,948.
Drzewiecki, Tadeusz M., 3,811,476.
Flogaus, William S.; Graves, Howard T.; Orlando, Harold J.; and Van Der Laske, Dennis P., 3,812,357.
Funke, Maurice F.; and Bald, James F., Jr., 3,812,368.
Graves, Howard T., 3,812,483.
Honeycutt, Thomas E.; Otto, William F.; and Cason, Charles M., III, 3,811,774.
Howell, James E.; Hudson, Wayne T.; and Krzyzewski, Henry A., 3,812,494.
Kaunzinger, Helmuth M.; and Buser, Rudolf G., 3,812,419.
Ricks, Earl C., 3,811,360.
Rodgers, Aubrey; and Widner, Rayburn K., 3,811,328.
Sayles, David C., 3,811,964.
Sayles, David C., 3,811,965.
Sayles, David C., 3,811,968.
Szabo, Louis R.; and Lazarus, Martin, 3,812,350.

Wharton, Walter W.; and Connaughton, Joseph W., 3,811,280.
Woods, Robert L., 3,811,475.
Woodward, Kenneth E., 3,811,362.
Army, mesne: *See—*
Barrett, Hillard E.; Clark, Donald B.; and Seid, Bernard, 3,811,713.
Hill, William E.; and Beason, Lew R., 3,811,966.
Army, The: *See—*
Baaso, George L., 3,811,708.
Atomic Energy Commission: *See—*
Culver, Gordon G.; and Riemath, William F., 3,811,426.
Hadeishi, Tetsuo, 3,811,778.
Walter, Edward G., 3,812,354.
Interior: *See—*
Bauer, Donald J.; Lindstrom, Roald W.; and Schultze, Lawrence E., 3,812,232.
National Aeronautics and Space administration; Administrator; with respect to an invention of:
Kim, Chung; Gorelick, Donald; and Chen, Wayne. Arterial pulse wave pressure transducer. 3,811,429, Cl. 128-2.05e.
Kraushaar, William L. Coaxial anode wire for gas radiation counters. 3,812,358, Cl. 250-385.000.
National Aeronautics and Space Administration, mesne: *See—*
Macovski, Albert; and Schaefer, Louis F., 3,812,527.
Navy: *See—*
Afendykiw, Marko; Boyle, John M.; and Hendrix, Charles E., 3,812,493.
Howe, David G.; and Meussner, Russell A., 3,811,185.
Johnson, Roy D.; and Rubis, Casimer Joseph, 3,812,411.
Leinkram, Charles Z.; and Oaks, William D., 3,811,181.
Marshall, Albert H.; and Siragusa, George A., 3,811,204.
Ream, Donald E., Jr.; and Brown, Gregory A., 3,811,648.
Sondheimer, Allen J., 3,811,379.
White, Frederick W., 3,811,329.
Navy, mesne: *See—*
Lane, Richard N.; and Horton, Claude W., 3,812,456.
Strickler, Charles J.; and Hammond, Aubrey J., 3,811,967.
United States Steel Corporation: *See—*
Chao, Hung-Chi; Judd, Robert R.; Rueckl, Roger L.; and Russell, Charles K., 3,811,878.
Universal Oil Products Company: *See—*
Gaydasch, Alexander, 3,812,034.
Rumpel, Harvey R., 3,811,727.
University of California, The Regents of the: *See—*
MacKenzie, John D., 3,811,851.
Upjohn Company, The: *See—*
Argoudelis, Alexander D.; and Coats, John H., 3,812,014.
Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., 3,812,096.
Bundy, Gordon L., 3,812,172.
Bundy, Gordon L., 3,812,179.
Collins, Robert J., 3,812,259.
Hester, Jackson B., Jr., 3,812,140.
Urbanosky, Harold J., to Schlumberger Technology Corporation. Methods and apparatus for testing earth formations. 3,811,321, Cl. 73-155.000.
U.S. Elevator Manufacturing Corporation: *See—*
Hunsberger, Arnold, 3,811,335.
U.S. Industries, Inc.: *See—*
Bruns, Eilert F., 3,811,638.
U.S. Philips Corporation: *See—*
Asseiman, George Albert Apolonia; and Dirne, Adrianus Petrus, 3,811,496.
Celling, Wolter Geppienus, 3,811,183.
De Bont, Paulus Maria; and Van Liefland, Willem, 3,812,317.
Henri, Dominique, 3,812,406.
Jacobs, Bernardus Antonius; and Kramer, Pieter, 3,811,779.
Jannssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendirk; Postma, Lambertus; and Vondeling, Jacob Klass, 3,811,893.
Meijer, Roelf Jan; Neelan, Gregorius Theodorus Maria; and Vree, Jules Herman, 3,811,497.
Nouel, Jean-Paul, 3,812,264.
Tan, Sing Liong, 3,812,526.
Van Lierop, Joseph Gijsbertus, 3,811,975.
U.S. Philips Corporation, mesne: *See—*
Aten, Albert Christiaan; Van Santen, Gerrit; and Renirie, Fredericus Hendricus Ignatius, 3,812,346.
Usborne, Andrew Charles, to UA Engineering Limited. Propulsion devices. 3,811,397, Cl. 115-14.000.
Ushihara, Masaharu: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,811,640.
Valle, Howard C., to Ametek, Inc. Connecting device. 3,811,786, Cl. 403-300.000.
Van Alphen, Adrianus Joannes Maria: *See—*
Lommers, Anthonius Johannes Josephus Cornelis; and Van Alphen, Adrianus Joannes Maria, 3,812,434.
Van Der Laske, Dennis P.: *See—*
Flogaus, William S.; Graves, Howard T.; Orlando, Harold J.; and Van Der Laske, Dennis P., 3,812,357.
Van der Lely, Cornelis. Implements. 3,811,581, Cl. 214-131.00a.
van der Linde, Willem B.; and Weslager, Clinton A., to Du Pont de Nemours, E. I., and Company. Package for dispensing an ice-removing composition. 3,812,043, Cl. 252-70.000.
Van Gilder, Burrows Corson; and Moyer, Elmo Emerson, to ELTHRA Corporation. Ferroresonant battery charger circuit. 3,812,415, Cl. 320-31.000.
Van Hekken, Frans: *See—*
Morrell, Albert Maxwell; and Van Hekken, Frans, 3,811,754.
Van Horn, Joseph M.; Epstein, Paul; and Phillipps, Patrick G., to Brattle Instrument Corporation. Biological signals monitor. 3,811,428, Cl. 128-2.06f.
Van Liefland, Willem: *See—*
De Bont, Paulus Maria; and Van Liefland, Willem, 3,812,317.
Van Lierop, Joseph Gijsbertus, to U.S. Philips Corporation. Method of manufacturing a semiconductor device and device manufactured by the method. 3,811,975, Cl. 156-13.000.
Van Santen, Gerrit: *See—*
Aten, Albert Christiaan; Van Santen, Gerrit; and Renirie, Fredericus Hendricus Ignatius, 3,812,346.
Vancini, Carlo A.: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,811,249.
Vandenberg, Willard J.: *See—*
Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., 3,811,552.
Vander Mey, John E., to Allied Chemical Corporation. Electrolyte and method for electroplating an indium-copper alloy and printed circuits so plated. 3,812,020, Cl. 204-24.000.
Vandervelden, Jan Josef Maria: *See—*
Earle, Paul Lewis; Musz, Andrew; and Vandervelden, Jan Josef Maria, 3,811,814.
Vanlerberghe, Guy; and Rosenbaum, Georges, to Societe Anonyme dite: L'Oreal. Cosmetic skin coloring compositions containing aminated α-dialdehydes. 3,812,246, Cl. 424-59.000.
Varian Associates: *See—*
Arnold, James T., 3,811,319.
Scott, Allan W., 3,812,395.
Varta A.G.: *See—*
Jung, Margarete, 3,811,949.
Vasas, Roger E.: *See—*
Avampato, Dominic C.; Dibella, Robert N.; and Vasas, Roger E., 3,811,950.
VEB Elektromat: *See—*
Werner, Guenther, 3,811,169.
Velo-Bind, Inc.: *See—*
Abildgaard, William H.; Groswith, Charles T. III; Deman, Heiko T.; and Buan, Danilo P., 3,811,146.
Velto Industries, Ltd.: *See—*
Mc Burnie, Stuart G.; Jorgensen, William A. W.; and Rocher, Michel L. E., 3,811,719.
Venker, Hilrich Jan Matthijs, to Societe Industrielle Honeywell Bull (Societe Anonyme). Mosaic printer. 3,812,495, Cl. 346-101.000.
Vepa AG: *See—*
Fleissner, Heinz, 3,811,988.
Verdier, Denise, to Colgate-Palmolive Company. Clear liquid detergent package. 3,812,042, Cl. 252-90.000.
Vereinigte Aluminium-Werke Aktiengesellschaft: *See—*
Schoer, Heinz; and Schultze, Werner, 3,811,177.
Vereinigte Baubeschlag Fabriken Gretsch & Co., GmbH: *See—*
Sittmann, Brigitte, 3,811,696.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Schwarz, Karl, 3,811,598.
Vermeerbergen, Leon Roger; and Flamand, Guy Antoine, to Saint-Gobain Industries. Bottle. 3,811,588, Cl. 215-1.00c.
Vermont Research Corporation, mesne: *See—*
Kimura, Noboru; and Junkert, Kenneth G., 3,812,533.
Vieceli, Joseph L.; and Williams, James T., to Sunbeam Corporation. Electric steaming and pressing appliance. 3,811,208, Cl. 38-77.800.
Viedt, Johanna: *See—*
Sundermann, Erich; and Viedt, Johanna, 3,811,815.
Viehbock, Franz P.: *See—*
Higatsberger, Michael J.; Rumpold, Karl O.; and Viehbock, Franz P., 3,812,364.
Vierow, William F.: *See—*
Liang, Charles C.; McDonald, Bruce; and Vierow, William F., 3,811,944.
Vigneau, Joel Olivier: *See—*
Lescop, Pierre; Michel, Pierre; and Vigneau, Joel Olivier. 3,811,919.
Villiers, Norton, Limited: *See—*
Hooper, Bernard, 3,811,528.
Villiger, Felix; and Gerber, Albert, 50% to Arova Schaffhausen AG and Losinger AG. Multi-layer fabric. 3,811,480, Cl. 139-384.000.
Virgin, Allan Geoffrey: *See—*
Randell, Donald Richard; Miles, Peter; and Virgin, Allan Geoffrey, 3,812,193.
VJG, Inc.: *See—*
Henry, Vincent, 3,811,882.
Voegeli, Henry Carl. Cable television housing with lockably joined cover and base. 3,812,279, Cl. 174-38.000.
Vogel, Christian: *See—*
Hoegerle, Karl; Muller, Jean-Claude; Vogel, Christian; and Rumpf, Jurg, 3,812,168.
Vogel, George E.: *See—*
Dennis, William E.; and Vogel, George E., 3,812,081.
Vogel, Ralph A.: *See—*

Edwards, Kenneth F.; and Vogel, Ralph A., 3,811,610.

Vogel, Wilhelm, to Bosch, Robert, G.m.b.H. Ignition system for an internal combustion engine. 3,811,420, Cl. 123-148.00e.

Vogeli, Ernsy, to Sulzer Brothers Ltd. Shut-off valve for working medium circuit. 3,811,279, Cl. 60-660.000.

Vogelsang, Gustav: *See—*
Gospodar, Reinhard; Reichel, Kurt; Vogelsang, Gustav; and Thauer, Peter, 3,811,416.

Voisin, Alain: *See—*
Pont, Dominique; Lafont. Andre; and Voisin, Alain, 3,811,527.

Volkswagenwerk Aktiengesellschaft: *See—*
Gospodar, Reinhard; Reichel, Kurt; Vogelsang, Gustav; and Thauer, Peter, 3,811,416.

Von Fischern, Bernhard: *See—*
Engelsmann, Dieter; Wagensonner, Eduard; Rieder, Alois; and Von Fischern, Bernhard, 3,812,503.

Von Saltza, Malcolm H.: *See—*
Bodanszky, Miklos; Ondetti, Miguel A.; Von Saltza, Malcolm H.; Narayanan, Venkatachlal L.; and Levine, Seymour D., 3,812,092.

Vondeling, Jacob Klass: *See—*
Jannssen, Casper Johannes Gerardus Ferdinand; Jonker, Hendirk; Postma, Lambertus; and Vondeling, Jacob Klass, 3,811,893.

Vornberger, George F., to Pullman Incorporated. Dump trailer having automatic tail gate lock. 3,811,729, Cl. 298-23.00m.

Vosper, Ralph Richard, to Coen Company. Direct-fired heating and combustion chamber. 3,811,827, Cl. 432-221.000.

Votocek, Otakar: *See—*
Noothout, Arend Jaman; Kanij, Johannes Bastiaan Willem; and Votocek, Otakar, 3,812,049.

Voykowitsch, Anton: *See—*
Hofer, Kurt; and Voykowitsch, Anton, 3,812,152.

Vrancken, Marcel Nicolas, to Agfa-Gevaert N.V. Thermographic copying. 3,811,773, Cl. 355-132.000.

Vree, Jules Herman: *See—*
Meijer, Roelf Jan; Neelan, Gregorius Theodorus Maria; and Vree, Jules Herman, 3,811,497.

Vydrin, Vladimir Nikolaevich; Agcev, Leonid Matveevich; and Sosjurko, Vladimir Georgievich. Method of rolling metal sheet articles. 3,811,307, Cl. 72-205.000.

Wada, Tsuneo: *See—*
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,811,887.

Wade, R. M., & Co.: *See—*
Cornelius, Gail L., 3,811,617.

Wagensonner, Eduard: *See—*
Engelsmann, Dieter; Wagensonner, Eduard; Rieder, Alois; and Von Fischern, Bernhard, 3,812,503.

Wagensonner, Edward; Borowski, Jurt; and Stumpf, Frederick, to AGFA-Gevaert Aktiengesellschaft. Indicator arrangement for a photographic camera. 3,812,504, Cl. 354-60.000.

Wagers, William D., Jr.; Vandenberg, Willard J.; Bollman, Robert L.; Ramsey, Robert E.; Swisher, Daniel G.; and Taylor, John E., Jr., to Lilly, Eli, and Company. Capsule inspection apparatus and method. 3,811,552, Cl. 198-33.0aa.

Wagner Electric Corporation: *See—*
Richards, John G., 3,812,390.

Wagner, Everett F.; Sidlo, Joseph J.; and Ruschke, Lawrence J., Jr., to Bell & Howell Company. Retractable cord assembly with electric switch integrally associated with rotatable reel housing member. 3,812,307, Cl. 200-52.00r.

Wagner, Gustav, Maschinenfabrik: *See—*
Kaiser, Gerhard; and Faiss, Gerhard, 3,811,556.

Walbridge, Derek John: *See—*
Burdett, Marion; and Walbridge, Derek John, 3,812,075.

Walhelm, Ragnar Ilmari Olof: *See—*
Back, Karl Johan; and Walhelm, Ragnar Ilmari Olof, 3,811,482.

Walker, Gordon Northrop, to Ciba-Geigy Corporation. Dibenzocycloheptenes. 3,812,119, Cl. 260-247.000.

Walkowa, Idea Wladimirowna: *See—*
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.

Walsh, Charles J.; and Barnhart, Morris W., to Edax International, Inc. Television display system. 3,812,288, Cl. 178-6.800.

Walter, Edward G., to United States of America, Atomic Energy Commission. Thermoluminescent detector for mass spectrometer. 3,812,354, Cl. 250-281.000.

Walther, William D.; and De Regnaucourt, Robert A., to Dayton Steel Foundry Company, The. Rim and wheel assembly. 3,811,732, Cl. 301-11.00r.

Ward, George C., to Southwire Company. Casting machine with combined presser-band guide wheel. 3,811,492, Cl. 164-278.000.

Warren, Lyle D.; and Brewster, Robert W. Automatic sawmill. 3,811,487, Cl. 144-312.000.

Warshawsky, Jay, to Fuller Company. Apparatus for cooling pulverulent material. 3,811,823, Cl. 432-80.000.

Wasson, Burton K.; and Williams, Haydn W. R., to Frosst, Charles E., & Co. 3,3-Disubstituted-benzodioxepins. 3,812,150, Cl. 260-326.150.

Wasson, Burton Kendall, to Frosst, Charles E., & Co. 3-Diazinyl-4-(3-secondary amino-2-hydroxypropoxy)-1,2,5-thiadiazoles. 3,812,125, Cl. 260-268.00h.

Watabe, Kaname. Apparatus for finishing photo-sensitive resin boards into relief printing plates. 3,812,514, Cl. 354-317.000.

Watanabe, Katsumi. Casette-type toy phonograph. 3,811,686, Cl. 274-9.00c.

Watanabe, Kazuo: *See—*
Saito, Tomoo; Morikawa, Naotake; and Watanabe, Kazuo, 3,811,838.

Watanabe, Masaharu: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,812,519.

Watermann, Willy: *See—*
Wehner, Karl-Heinz; Bell, Gunter; and Watermann, Willy, 3,811,288.

Waters, Robert S.: *See—*
Brenneman, J. Edward; and Waters, Robert S., 3,811,188.

Watkins, Bernard. Fish hook releasing device. 3,811,217, Cl. 43-44.820.

Watkins-Johnson Company: *See—*
Gralenski, Nicholas M., 3,812,366.

Waymire, John: *See—*
Penn, Paul E.; and Waymire, John, 3,812,408.

Weaver, Merle L.; Hautala, Earl; and Nonaka, Masahide, to United States of America, Agriculture. Process for preparing shaped potato products containing solely freshly cooked and mashed potato tissue. 3,812,274, Cl. 426-438.000.

Weaver, Richard V.: *See—*
Short, Oliver A.; and Weaver, Richard V., 3,811,906.

Webb, Robert Lee: *See—*
Baile, Clifton A.; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,812,255.

Weber, Alice. Oral hygiene appliance. 3,811,447, Cl. 128-304.000.

Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzenesulfonyl ureas. 3,812,185, Cl. 260-553.0da.

Weber, Helmut E.: *See—*
Coleman, Richard R., Jr.; and Weber, Helmut E., 3,811,796.

Weder, Hans Georg. Dialysis apparatus. 3,811,573, Cl. 210-321.000.

Weedon, Gene Clyde, to Allied Chemical Corporation. Polyesters with improved dyeability. 3,812,178, Cl. 260-512.00r.

Weeks, Albert Arthur, to British Hovercraft Corporation, Limited. Method for moving and lifting a ship section. 3,811,583, Cl. 214-152.000.

Weeks, John R., Jr.: *See—*
Drouhard, Alfred J., Jr.; and Weeks, John R., Jr., 3,811,135.

Wehner, Karl-Heinz; Bell, Gunter; and Watermann, Willy, to Klockner-Werke AG. Traveling face support with an attached extensible shield. 3,811,288, Cl. 61-45.00d.

Wehring, Elwood: *See—*
Dula, Alfred A.; and Wehring, Elwood, 3,811,710.

Wehrmeister, Herbert L., to Commercial Solvents Corporation. Imidazoline tranquilizing agents. 3,812,111, Cl. 260-240.00d.

Wehrmeister, Herbert L.; and Robertson, Donald E., to Commercial Solvents Corporation. Production of dideoxyzearalane. 3,812,155, Cl. 260-343.20f.

Weichhand, Robert J.; Schuler, Ralph J.; and Dieter, Julian A., to Jones, R. A., & Company, Incorporated. Packaging machine having reciprocating transport conveyor. 3,811,350, Cl. 74-53.000.

Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,812,181.

Weinstein, Martin; Speirs, Kenneth K.; and Baer, Robert B., to Chromalloy American Corporation. Corrosion resistant coating system. 3,811,959, Cl. 148-6.15r.

Weinstein, Martin; Singhal, Subhash C.; and Ellis, John L., to Chromalloy American Corporation. Boridized steel-bonded carbides. 3,811,961, Cl. 148-34.000.

Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., to Frosst, Charles E., & Co. S-Bis-(2-lower alkyl amino hydroxymethylethoxy)-methanes. 3,812,182, Cl. 260-584.00r.

Weir Pumps Limited: *See—*
Randell, Forrest Thomson, 3,811,789.

Weisbord, Leon: *See—*
Bilinski, Donald J.; and Weisbord, Leon, 3,811,172.

Weiss, Erwin M.: *See—*
Brander, Richard; and Weiss, Erwin M., 3,812,300.

Welker, Jerry W.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,811,584.

Weller, Charles E., to Shell Oil Company. Seismic exploration method. 3,812,457, Cl. 340-15.5td.

Wellings, Raymond Joseph: *See—*
Wise, John Arthur; Wellings, Raymond Joseph; and Williams, Eric, 3,811,281.

Wells, James E. Convertible ash tray-bank. 3,811,452, Cl. 131-170.00a.

Welzein, Norman F.: *See—*
Keenan, Daniel J.; and Welzein, Norman F., 3,811,417.

Wennerberg, Arnold N.; and Frazier, Alvin W., to Standard Oil Company. Hydrotreatment of fossil fuels. 3,812,028, Cl. 208-112.000.

Werner, Guenther, to VEB Elektromat. Arrangement for inserting prefabricated coils of wire into the slot of electrical machines. 3,811,169, Cl. 29-205.00d.

Werner, Lincoln Harvey, to Ciba-Geigy Corporation. 5-Arylsulfamylanthranilic acids. 3,812,104, Cl. 260-239.600.

Wernlund, Roger F.; Carroll, David I.; Kilpatrick, Wallace D.; and Cohen, Martin J., to Franklin Gno Corporation. Apparatus and methods for measuring ion mass as a function of mobility. 3,812,355, Cl. 250-283.000.

Wertz, C. Kenneth. Film display apparatus. 3,811,762, Cl. 353-26.000.

Weslager, Clinton A.: *See—*
van der Linde, Willem B.; and Weslager, Clinton A., 3,812,043.

Wessel, Per Christian; and Eldby, Per, to Kvaerner Brug A/S. Folding cover system for hatches. 3,811,396, Cl. 114-201.00r.

Wesson, Richard A.; and Platter, Sandford, to Semi, Inc., mesne and Jarratt, Robert L., Trustee; in bankruptcy for Semiconductor Electronic Memories, Inc. Isothermal boat container. 3,811,829, Cl. 432-253.000.

Westcott, Edwin Russell: *See—*
Herz, Arthur Herman; and Westcott, Edwin Russell, 3,811,896.

Western Electric Company, Incorporated: *See—*
Rapp, Willard Emanuel, 3,811,193.

Western Geophysical Company of America: *See—*
Johnston, Otis A., 3,811,530.

Westfield, Donald: *See—*
Clark, Roy; and Westfield, Donald, 3,811,922.

Westinghouse Air Brake Company: *See—*
Reno, William H.; and Westinghouse Air Brake Company, 3,812,444.

Westinghouse Electric Corporation: *See—*
Archer, David H.; Brecher, Lee E.; Morris, Joe P.; Talko, Francis; and Taylor, Herbert L., 3,811,936.
Miller, Robert C.; and Carr, Walter J., Jr., 3,812,484.
Murtha, John C.; and Ross, James A., Jr., 3,812,470.

Weston, Norma Ann, to American Cyanamid Company. Fluorescent composition containing a coumarone-indene resin. 3,812,052, Cl. 252-301.20r.

Westphalen, Leonard F. Multifocal adapter for cameras. 3,812,509, Cl. 354-195.000.

Westra, Simon, to Shell Oil Company. Universal spacer connector for verticle mooring buoy hoses. 3,811,142, Cl. 9-8.00p.

Westvaco Corporation: *See—*
Ringley, Michael B., 3,811,995.

Weyer Haeuser Company: *See—*
Ryan, Arthur Sensor, 3,812,001.

Weyer, Rudi: *See—*
Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,812,185.

Wezel, Hans; and Zeller, Manfred, to Schmid & Wezel. Portable pneumatic power tool. 3,811,513, Cl. 173-12.000.

Wharton, Walter W.; and Connaughton, Joseph W., to United States of America, Army. Process of using storable propellant fuels in supersonic combustion ramjets. 3,811,280, Cl. 60-207.000.

Wheeler, Foster, Corporation: *See—*
Dunmyer, Joseph C., Jr.; and Godino, Rino L., 3,811,844.

White, Frederick W., to United States of America, Navy. Stabilized platform. 3,811,329, Cl. 74-5.410.

White, Harold R.: *See—*
Doncer, Alex J.; and White, Harold R., 3,811,324.

Whitehall Electronics Corporation: *See—*
Pearson, Raymond H., 3,812,455.

Whitman, Nelson, to General Electric Company. Acoustic flame detectors for steam generators. 3,811,816, Cl. 431-75.000.

Whitney, W. G., Corporation: *See—*
Whitney, William G.; and Muesing, Lawrence, 3,811,136.

Whitney, William G.; and Muesing, Lawrence, to Whitney, W. G., Corporation. Sanitary urine collector. 3,811,136, Cl. 4-110.000.

Whittaker, Mack P.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Production of highly ordered graphite particles. 3,812,240, Cl. 423-448.000.

Widdifield, Garth E. Method and apparatus for mounting hair. 3,811,425, Cl. 128-1.000.

Widner, Rayburn K.: *See—*
Rodgers, Aubrey; and Widner, Rayburn K., 3,811,328.

Wiechert, Rudolf: *See—*
Berndt, Hans-Detlef; Steinbeck, Hermann; and Wiechert, Rudolf, 3,812,165.

Wiechert, Rudolf; and Steinbeck, Hermann, to Schering Aktiengesellschaft. Dichloro-substituted estradiene. 3,812,166, Cl. 260-397.400.

Wieder, Harold, to International Business Machines Corporation. Method for superresolution in an optical memory. 3,812,477, Cl. 340-173.0lm.

Wilcox, Milton E., to Motorola, Inc. Monolithic horizontal processing circuit with selectable duty cycle. 3,812,387, Cl. 307-265.000.

Wilder, Donald L.: *See—*
Ryan, William J., Sr.; Schirmer, Edward F.; Thoma, Nandor G.; Tolley, James H.; and Wilder, Donald L., 3,811,182.

Wilding, Edwin L., to Griffin & Company. Method of processing tobacco in a blend-bulk silo. 3,811,585, Cl. 214-152.000.

Wilhelmsen, Paul C.: *See—*
Neale, Robert E.; Wilhelmsen, Paul C.; and Winterhalter, David R., 3,811,682.

Wilkes Pool Corporation: *See—*
Barrera, Salvatore E., 3,811,712.

Wilkinson, Michael C.; Blais, Leo; Martin, Wilhelm N.; and Tesainer, Silvano, to Consolidated Paper (Bahamas) Limited. Apparatus for bonding thermoplastic materials and products thereof. 3,811,987, Cl. 156-497.000.

Wilkinson Sword Limited: *See—*
Brown, Henry E., 3,811,439.

Wilks, Phillip H.: *See—*
Scammon, Lawrence W., Jr.; Grant, Clarence L.; and Wilks, Phillip H., 3,811,907.

Willey, Ronald R.: *See—*
MacNeill, John H.; and Willey, Ronald R., 3,812,459.

Williams, Eric: *See—*
Wise, John Arthur; Wellings, Raymond Joseph; and Williams, Eric, 3,811,281.

Williams, Haydn W. R.: *See—*
Wasson, Burton K.; and Williams, Haydn W. R., 3,812,150.

Williams, James T.: *See—*
Vieceli, Joseph L.; and Williams, James T., 3,811,208.

Williams, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. Glyoxalated 2-vinyl-1-cycloamideneproplonamide polymers. 3,812,084, Cl. 260-67.00r.

Wilson, Katherine W.: *See—*
Gamarra, Jose P.; Swidler, Ronald; and Wilson, Katherine W., 3,811,131.

Wilson, Richard C., to Aluminum Company of America. Ball bat construction. 3,811,596, Cl. 220-24.00a.

Wilt, John E. Wild fowl decoy device. 3,811,221, Cl. 46-180.000.

Winiarz, Olgiero S.: *See—*
McInerney, Charles E.; and Winiarz, Olgiero S., 3,811,741.

Winterhalter, David R.: *See—*
Neale, Robert E.; Wilhelmsen, Paul C.; and Winterhalter, David R., 3,811,682.

Wintershall Aktiengesellschaft: *See—*
Lohmuller, Ulrich, 3,812,163.

Wirtz, John S.; and Nellis, David C., to Itek Corporation. System for detecting a change in light intensity. 3,812,372, Cl. 250-561.000.

Wise, John Arthur; Wellings, Raymond Joseph; and Williams, Eric, to Lucas Aerospace Limited. Hydraulic engine starting systems. 3,811,281, Cl. 60-413.000.

Witteles, Abraham A.; and Putterman, Harry, to Singer, Company, The. Read-only-memory with rediation set theshold voltage. 3,812,479, Cl. 340-173.0ls.

Wolf, Erich L.; and Flynn, William T., to Reliance Electric Company. Machine for weighing, printing and punching workpieces. 3,811,522, Cl. 177-13.000.

Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, to Bayer Aktiengesellschaft. Aromatic polyamide compositions containing aromatic sulfonimide having an affinity for basic dyes. 3,812,085, Cl. 260-78.00r.

Wolf, Walter A.; Corn, Prentice R.; and Gebhardt, Wallace A., to Switches, Incorporated. Tread type switch for use in passenger seats or the like. 3,812,313, Cl. 200-86.00r.

Wollum, James E.; Birchmeier, Hans P.; and Sharp, Richard S., to Burroughs Corporation. Multiprocessing system having means for dynamic redesignation of unit functions. 3,812,468, Cl. 340-172.500.

Wood, Chester W., to Dover Corporation. Automatic shut-off nozzle responsive to more than one condition in a tank being filled. 3,811,486, Cl. 141-208.000.

Woodcock, Louis E. Multiple purpose latch mechanism. 3,811,301, Cl. 70-12.000.

Wooden, John A., to Brookside Corporation. Method of forming centrifugal blower wheel. 3,811,978, Cl. 156-160.000.

Woodling, Gerald L.: *See—*
Johnson, Ernest D.; Kirschner, Gerald D.; Kondrajian, Edward; and Woodling, Gerald L., 3,811,385.

Woodmansee, Donald E., to General Electric Company. Refractory bodies as fixed bed coal gasification diluents. 3,811,849, Cl. 48-202.000.

Woods, James F.; and Kerns, Gary Paul, to Standard Hydraulics Service, Inc. Pump filters. 3,811,571, Cl. 210-136.000.

Woods, Robert L., to United States of America, Army. Flueric gas-to-liquid interface amplifier. 3,811,475, Cl. 137-840.000.

Woodward, Ernest F. Cargo carring vehicle. 3,811,724, Cl. 296-36.000.

Woodward, Gary F., to Ford Motor Company. Transmission mounted speed sensor with odometer switch. 3,812,331, Cl. 235-95.00r.

Woodward, Gary F., to Ford Motor Company. Electric odometer drive. 3,812,332, Cl. 235-95.00r.

Woodward, Kenneth E., to United States of America, Army. Moving splitter fluidic device. 3,811,362, Cl. 91-232.000.

Woolley, Brown J.: *See—*
Rogers, Joe C.; and Woolley, Brown J., 3,811,510.

Wren, Frederick James, to Timken Company, The. Roller bearing lubrication. 3,811,743, Cl. 308-187.000.

Wren, Frederick James; Instone, Eric Frank; Hunt, John Oliver Alfred; and Wright, Alan John, to Timken Company, The. Rolling bearings. 3,811,744, Cl. 308-235.000.

Wright, Alan John: *See—*
Wren, Frederick James; Instone, Eric Frank; Hunt, John Oliver Alfred; and Wright, Alan John, 3,811,744.

Wright, Arthur J.: *See—*
Farber, Sheldon; and Wright, Arthur J., 3,812,146.
Lin, Chao-Han; and Wright, Arthur J., 3,812,157.

Wright, Charles J.: *See—*
Darlak, Robert S.; and Wright, Charles J., 3,811,891.

Wright, Howard J., to Cook Paint and Varnish Company. Reaction product of acrylamide polymers and polyphenolic precursor. 3,812,202, Cl. 260-834.000.
Wright, John S. Transparency display device. 3,811,212, Cl. 40-106.100.
Wright, Robert Lee, to Monsanto Company. Solutions of resol condensates of unsaturate-resorcinol polymers. 3,812,068, Cl. 260-29.300.
Wurttembergische Metallwerke: *See*—
Schlomer, Josef; and Hof, Georg, 3,811,976.
Wyckoff, Charles W., to Applied Photo Sciences, Inc., mesne. Color photography. 3,812,507, Cl. 254-104.000.
Wyler, Mark, to Lee, Raymond, Organization, Inc., The. Miter box of variable width. 3,811,356, Cl. 83-762.000.
Xerox Corporation: *See*—
Forest, Edward, 3,811,764.
Inoue, Noriyuki, 3,811,670.
Robinson, Thomas K., Jr., 3,811,766.
Tamai, Yasuo; Taguchi, Seiichi; Yamada, Kiyoshi; and Yamamoto, Nobuo, 3,812,037.
Yabu, Toshiomi: *See*—
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,811,640.
Yakubek, Louis P.; and Obenshain, George R., to Owens-Illinois, Inc. Glass heat treat machinery. 3,811,862, Cl. 65-280.000.
Yamada, Kiyoshi: *See*—
Tamai, Yasuo; Taguchi, Seiichi; Yamada, Kiyoshi; and Yamamoto, Nobuo, 3,812,037.
Yamaguchi, Hisashi: *See*—
Ishihara, Masao; Wada, Tsuneo; Yamaguchi, Hisashi; and Sugita, Sadao, 3,811,887.
Yamaguchi, Tadanori: *See*—
Sato, Shuichi; and Yamaguchi, Tadanori, 3,812,517.
Yamaguchi, Tetsuo: *See*—
Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, 3,812,488.
Yamamoto, Hisao: *See*—
Ishizumi, Kikuo; Mori, Kazuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,102.
Kimura, Michio; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,112.
Okamoto, Tadashi; Akase, Takeshi; Izumi, Takahiro; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,135.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,812,118.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, 3,812,257.
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, to Sumitomo Chemical Company, Ltd. Novel process for preparing 1-substituted-benzodiazepine derivatives. 3,812,101, Cl. 260-239.30d.
Yamamoto, Michihiro: *See*—
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,812,101.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. 2(1H)-Quinazolinones by reaction of 2-carbamoylindoles with halogen. 3,812,118, Cl. 260-247.100.
Yamamoto, Michihiro; Morooka, Shigeaki; Koshiba, Masao; Aono, Shunji; Aisaka, Akira; Inaba, Shigeho; Nakatani, Hiroshi; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Uricosuric agent. 3,812,257, Cl. 424-251.000.
Yamamoto, Nobuo: *See*—
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, 3,811,889.
Tamai, Yasuo; Taguchi, Seiichi; Yamada, Kiyoshi; and Yamamoto, Nobuo, 3,812,037.
Yamanaka, Izumi; Sato, Hironobu; and Takeuchi, Yoshihiro, to National Cash Register Company, The. Recording device control system. 3,811,615, Cl. 235-58.00p.
Yamanaka, Senya. Life buoy. 3,811,144, Cl. 9-311.000.
Yamauchi, Masayuki: *See*—
Ohta, Wasaburo; Kasuya, Kazuhiko; Fujimoto, Sakae; and Yamauchi, Masayuki, 3,811,828.
Yancey, John W., to Caterpiller Tractor Company. Enclosed gear drive machanism for excavators. 3,811,577, Cl. 212-69.000.
Yang, Kang: *See*—
Johnson, Morris A.; and Yang, Kang, 3,812,211.
Yankowskis, Stanislaws Kazimirowich: *See*—
Kashkina, Nadezhda Alexandrovna; Pormale, Milda Yanovna; Kalninch, Arvid Yanovich; Shusters, Yanis; Dambite, Guna Robertowna; Reinberg, Ipatiya Marcewna; Walkowa, Idea Wladimirowna; Tipaine, Wiya Aleksandrowna; Skutelis, Antons Petrowich; Yankowskis, Stanilaws Kazimirowich; and Olina, Inese Petrowna, 3,812,099.
Yazaki, Mutsunobu: *See*—
Matsubs, Mutsuhide; Ogiso, Mitsutoshi; and Yazaki, Mutsunobu, 3,812,508.
Yazawa, Hisatoyo: *See*—
Takano, Tadayoshi; Kariyone, Kazuo; Kurita, Masaru; Yazawa, Hisatoyo; Nakamura, Hitoshi; and Hasegawa, Mitsunori, 3,812,116.
Yiannos, Peter N.: *See*—
Salvucci, Joseph L., Jr.; and Yiannos, Peter N., 3,812,000.
Yoichi, Tsuchiya, to Teac Corporation. System for discriminating classification of a magnetic recording medium. 3,812,529, Cl. 360-25.000.
Yokoyama, Masuzo: *See*—
Tashiro, Kijuro; Yokoyama, Masuzo; and Kitazume, Shoji, 3,812,089.
Yoneyama, Masakazu: *See*—
Endou, Koutarou; Yoneyama, Masakazu; Yamamoto, Nobuo; Ojihara, Motohiro; and Nakajima, Yosuke, 3,811,889.
Yonezawa, Teruhiko; and Shirai, Akira, to Fuji Photo Film Co., Ltd. Photosensitive aluminum plate and process for preparing the same. 3,811,894, Cl. 96-86.00r.
Yonezawa, Toshio: *See*—
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,812,519.
Yoshikawa, Junihiko, to Kabushiki Kaisha Yoshikawa Seisakusho. Apparatus for attaching a center pull type brake to a bicycle. 3,811,541, Cl. 188-206.00r.
Yoshikawa, Toshikazu: *See*—
Takimoto, Yasuyuki; and Yoshikawa, Toshikazu, 3,812,078.
Yoshimura. Takayuki. Method of manufacturing the body of a neck-in can and an apparatus used therefor. 3,811,306, Cl. 72-126.000.
Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Television receiver for displaying a computing process. 3,812,488, Cl. 340-324.0ad.
Yoshizaki, Akira: *See*—
Hayashi, Toshio; Yoshizaki, Akira; and Tsujimoto, Kayoshi, 3,812,499.
Yoshizumi, Shuzo; and Matsumoto, Yoshimitsu, to Matsushita Electric Industrial Co., Ltd. Apparatus for welding, fusing or heating workpiece utilizing energy of a light beam. 3,812,318, Cl. 219-85.000.
Young, Oswald William John: *See*—
Stibbs, Donald; Thompson, Raymond; and Young, Oswald William John, 3,811,899.
Yuan, Edward L., to Du Pont de Nemours, E. I., and Company. Smoke and flame resistant laminate articles. 3,811,997, Cl. 161-68.000.
Zabolotsky, Grigory Mikhailovich; Rakovsky, Vladimir Mikhailovich; Shuster, Sergei Alexandrovich; and Boldyrev, Mikhail Vsevolodovich. Method of making split metal packing rings. 3,811,166, Cl. 29-156.600.
Zahn, Wolfgang; and Huber, Hans-Peter, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for encoding and treating strips of photographic print. 3,811,768, Cl. 355-29.000.
Zarges Leichtbau GmbH, Firma: *See*—
Kuemmerlin, Walter, 3,811,151.
Zaugg, Roland; and Fluck, Josef, to Schild, A., S.A. Watch movement automatic rewinding assembly with rotating mass. 3,811,267, Cl. 58-82.00a.
Zeller, Manfred: *See*—
Wezel, Hans; and Zeller, Manfred, 3,811,513.
Zellweger, Ltd., Uster Factories for Apparatus and machines: *See*—
Felix, Ernst, 3,811,261.
Zemtsov, Nikolai Nikolaevich: *See*—
Birger, Abram Isaakovich; Fiskin, Alexandr Mikhailovich; Samsonov, Ivan Sergeevich; Savushkin, Anatoly Alexandrovich; Zemtsov, Nikolai Nikolaevich; and Borisevich, Vitaly Arkadievich, 3,811,812.
Zenith Radio Corporation: *See*—
Kaplan, Sam H., 3,812,394.
Ziegler, William M., to American Cyanamid Company. Purification of 7-chlorotetracycline. 3,812,188, Cl. 260-559.0at.
Zimmer, Peter: *See*—
Bohm, Walter, 3,811,378.
Zimmermann, Adolf, Maschinenbau: *See*—
Lesk, Adolf; Baumann, Rudolf; and Link, Otmar, 3,811,248.
Zimmermann, Frank: *See*—
Kraft, Helmut; Zimmermann, Frank; and Hofmann, Hans-Peter, 3,812,258.
Zimmermann, Horst: *See*—
Hartmann, Rudolf; and Zimmermann, Horst, 3,811,283.
Zmatlik, Josef: *See*—
Peschl, Ervin; Zmatlik, Josef; Sedlecky, Jaromir; and Kolar, Vladimir, 3,811,299.
Zobel, Siegfried: *See*—
Hackenbert, Hubert; and Zobel, Siegfried, 3,812,511.
Zographos, Georg; and Frey, Christoph, to Ciba-Geigy AG. Photoelectrophoretic imaging process employing naphthofuranediones. 3,811,883, Cl. 96-1.300.
Zola, John C. Novel coating compositions and their preparation. 3,811,904, Cl. 106-193.00j.
Zust, Armin; and Schindler, Walter; deceased (by Gysin, Leonhard; executor), to Ciba-Geigy Corporation. [1-[4-[3-(p-Fluorobenzoyl)-propyl]-1 piperazinyl]-alkyl-]-3 alkyl-2-imidazolidinones. 3,812,126, Cl. 260-268.00h.
Zutter, Hans: *See*—
Suter, Hans; Zutter, Hans; and Muller, Hans Rudolf, 3,812,186.
06/21/74; and Sterlini, Jacques, to Societe Anonyme: Compagnie Electro-Mecanique. Intimate gas-liquid contact method and apparatus. 3,811,663, Cl. 261-151.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF MAY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Lundstrom, Hans T., and Allmanna. Re. 28,018.
Clark Equipment Co.: *See*—
Dence, Donald S. Re. 28,017.
Dence, Donald S., to Clark Equipment Co. Hydraulic shifting mechanism for a mechanical transmission. Re. 28,017, 5–21–74, Cl. 74—477.
Dow Chemical Co., The: *See*—
Knieriem, Herman, Jr. Re. 28,014.
General Electric Co.: *See*—
Vermilyea, David A., Ochar, and Vedder. Re. 28,015.
Huddle, Carl F., to Tension Structures Co. Damping means for portable structures. Re. 28,012, 5–21–74, Cl. 135—1.
Kabushiki Kaisha Rioch: *See*—
Koizumi, Yutaka. Re. 28,016.
Knieriem, Herman, Jr., to The Dow Chemical Corp. Method for dry cleaning. Re. 28,014, 5–21–74, Cl. 8—142.
Koizumi, Yutaka, to Kabushiki Kaisha Rioch. Optical scanner and slit exposure device for reproduction apparatus. Re. 28,016, 5–21–74, Cl. 355—65.
Lundstrom, Hans T., by Allmanna Svenska Elektriska Aktiebolaget, a Corp., of Sweden, assignee. Vertical tube furnace. Re. 28,018, 5–21–74, Cl. 13—20.
McLarty, Gordon. Safety switch and circuit for oil-burning furnace. Re. 28,013, 5–21–74, Cl. 431—22.
Ochar, Donald R.: *See*—
Vermilyea, David A., Ochar, and Vedder. Re. 28,015.
Tension Structures Co.: *See*—
Huddle, Carl F. Re. 28,012.
Vedder, Willem: *See*—
Vermilyea, David A., Ochar, and Vedder. Re. 28,015.
Vermilyea, David A., D. R. Ochar, and W. Vedder, to General Electric Co. Aluminum electrode electrolytic capacitor construction. Re. 28,015, 5–21–74, Cl. 29—570.

LIST OF PLANT PATENTEES

Butters, Keith D., to Yoder Brothers, Inc. Chrysanthemum plant. 3,553, 5–21–74, Cl. 78.
Cully, Earl. Bald cypress. 3,551, 5–21–74, Cl. 50.
Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,552.
Harcharik, Thomas G.: *See*—
Mazzanti, Peter F., and Harcharik. 3,554.
Jackson & Perkins Co.: *See*—
Warriner, William A. 3,555.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,552, 5–21–74, Cl. 75.
Mazzanti, Peter F.: *See*—
Mazzanti, Peter F., and Harcharik. 3,554.
Mazzanti, Peter F., and T. G. Harcharik; said Harcharik assor. to said Mazzanti. Carnation plant. 3,554, 5–21–74, Cl. 70.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,555, 5–21–74, Cl. 22.
Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,552.
Butters, Keith D. 3,553.

LIST OF DESIGN PATENTEES

Boano, Gianpaolo, to Fiat Societe per Azioni. Automobile. 231,672, 5–21–74, Cl. D12—91.
Brooks, Joe W., D. C. Waters, and P. J. Ciener. Display cabinet. 231,668, 5–21–74, Cl. D6—167.
Ciener, Paul J.: *See*—
Brooks, Joe W., Waters, and Ciener. 231,668.
Fee, Robert W., to Lawndale Industries, Inc. Lavatory. 231,675, 5–21–74, Cl. D23—58.
Fiat Societe per Azioni: *See*—
Boano, Gianpaolo. 231,672.
Genaro, Donald M., and C. A. Iten, to Philip Morris Inc. Razor blade dispenser. 231,670, 5–21–74, Cl. D9—224.
Heavy Light Mfg. Corp.: *See*—
Keller, John A. 231,679.
Keller, John A. 231,680.
House, Lawrence E., II., to Litton Medical Products, Inc. Dental control unit. 231,676, 5–21–74, Cl. D24—1.
Intercollection Development S.A.: *See*—
Tuttle, Paul. 231,667.
Iten, Clemens A.: *See*—
Genaro, Donald M., and Iten. 231,670.
Jimenez, Ivan, and I. Rubin. Mounting for a rifle telescopic sight. 231,674, 5–21–74, Cl. D22—7.
K-Tel International, Inc.: *See*—
Krause, Arthur A. 231,669.
Keller, John A., to Heavy Light Mfg. Corp. Lighting fixture. 231,679, 5–21–74, Cl. D48—4.
Keller, John A., to Heavy Light Mfg. Corp. Outdoor lighting fixture. 231,680, 5–21–74, Cl. D48—31.
Krause, Arthur A., to K-Tel International, Inc. Dish rack. 231,669, 5–21–74, Cl. D7—188.
Lawndale Industries, Inc.: *See*—
Fee, Robert W. 231,675.
Litton Medical Products, Inc.: *See*—
House, Lawrence E., II. 231,676.
Matsushita Electric Industrial Co., Ltd.: *See*—
Takahashi, Hanji, and Takeoka. 231,681.
Miller, Robert E. Combined tabletop, aquarium and cover therefor or similar article. 231,677, 5–21–74, Cl. D30—8.
Nanpei, Masahiro, to Sumitomo- Rubber Industries, Ltd. Tire. 231,673, 5–21–74, Cl. D12—141.
Pacitti, Thomas G. Belt buckle. 231,666, 5–21–74, Cl. D2—431.
Philip Morris Inc.: *See*—
Genaro, Donald M., and Iten. 231,670.
Rineman, Harold J.: *See*—
Young, S., Albert. 231,671.
Rubin, Irving: *See*—
Jimenez, Ivan, and Rubin. 231,674.
Sacks, Emmy L. Sport ball bag. 231,682, 5–21–74, Cl. D87—1.
Sumitomo- Rubber Industries, Ltd.: *See*—
Nanpei, Masahiro. 231,673.
Takahashi, Hanji, and R. Takeoka, to Matsushita Electric Industrial Co., Ltd. Record player. 231,681, 5–21–74, Cl. D56—4.
Takeoka, Ryoichi: *See*—
Takahashi, Hanji, and Takeoka. 231,681.
Trotter, Edward E. Treadmill. 231,678, 5–21–74, Cl. D34—5.
Tuttle, Paul, to Intercollection Development S.A. Chair. 231,667, 5–21–74, Cl. D6—31.
Waters, Delma C.: *See*—
Brooks, Joe W., Waters, and Ciener. 231,668.
Young, S., Albert, ½ to each Rineman, Harold J., Rineman, and Richard Lynn. Folding motorized vehicle. 231,671, 5–21–74, Cl. D12—1.

CLASSIFICATION OF PATENTS

ISSUED MAY 21, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
177 3,811,130
243 3,811,131
270 3,811,132

CLASS 3
36 3,811,133

CLASS 4
18 3,811,134
76 3,811,135
110 3,811,136
172.19 3,811,137

CLASS 5
9 3,811,138
82 3,811,139
327R 3,811,140

CLASS 8
10.1 3,811,830
11 3,811,831
94.26 3,811,832
111 3,811,833
116R 3,811,834
128A 3,811,835
142 Re.28,014
173 3,811,836

CLASS 9
6 3,811,141
8P 3,811,142
310R 3,811,143
311 3,811,144

CLASS 10
123P 3,811,145

CLASS 11
1R 3,811,146

CLASS 13
10 3,812,275
20 Re.28,018
25 3,812,276

CLASS 14
1 3,811,147

CLASS 15
3.14 3,811,148

CLASS 16
130 3,811,149
137 3,811,150
144 3,811,151

CLASS 17
1R 3,811,152
76 3,811,153

CLASS 23
230HC 3,811,837
230PC 3,811,838
253PC 3,811,839
253TP 3,811,840
253R 3,811,841
259 3,811,842
270.5 3,811,843
3,811,844
288F 3,811,845

CLASS 24
73P 3,811,154
115G 3,811,155
201C 3,811,156
221R 3,811,157
239 3,811,158

CLASS 26
55R 3,811,159

CLASS 29
76A 3,811,160
81H 3,811,161
96 3,811,162
103A 3,811,163
128 3,811,164
132 3,811,165
156.6 3,811,166
193 3,811,846
200P 3,811,167
203H 3,811,168
205D 3,811,169
208D 3,811,171
429 3,811,170
445 3,811,172
453 3,811,174
460 3,811,173
464 3,811,175
469 3,811,176
494 3,811,177
517 3,811,178
568 3,811,179
570 Re.28,015
572 3,811,180
3,811,181
574 3,811,182
588 3,811,183
592 3,811,184
599 3,811,185
626 3,811,186
630R 3,811,187

CLASS 30
34R 3,811,188
346.53 3,811,189

CLASS 32
56 3,811,190

CLASS 33
137L 3,811,191
170 3,811,192
178R 3,811,193
181AT 3,811,194
185R 3,811,196
265 3,811,195
374 3,811,197

CLASS 34
9.5 3,811,200
24 3,811,198
54 3,811,201
92 3,811,199
133 3,811,202

CLASS 35
6 3,812,277
22R 3,811,203
25 3,811,204
32 3,811,205
35H 3,811,206

CLASS 36
2.5AL 3,811,207

CLASS 38
77.8 3,811,208
102.6 3,811,209
144 3,811,210

CLASS 40
2.2 3,811,211
106.1 3,811,212
106.53 3,811,213
152 3,811,214

CLASS 43
18R 3,811,215
26 3,811,216
44.82 3,811,217

CLASS 44
62 3,811,848
63 3,811,847

CLASS 46
17 3,811,218
25 3,811,219
135R 3,811,220
180 3,811,221

CLASS 48
202 3,811,849

CLASS 49
9 3,811,222
127 3,811,223
168 3,811,224
463 3,811,225

CLASS 51
16 3,811,227
49 3,811,228
80R 3,811,226
125 3,811,229
127 3,811,230
163 3,811,231
249 3,811,232
269 3,811,233
323 3,811,234

CLASS 52
69 3,811,235
102 3,811,236
126 3,811,237
204 3,811,238
406 3,811,239
560 3,811,240
760 3,811,241

CLASS 53
24 3,811,242
30 3,811,243
116 3,811,244
124A 3,811,245

CLASS 55
71 3,811,246
84 3,811,249
178 3,811,247
228 3,811,252
270 3,811,253
272 3,811,248
274 3,811,250
276 3,811,251
306 3,811,254

CLASS 56
13.3 3,811,255

CLASS 57
1R 3,811,256
9 3,811,257
34HS 3,811,258
58.83 3,811,259
77.3 3,811,260
81 3,811,261
140BY 3,811,262
140R 3,811,263
159 3,811,264

CLASS 58
24R 3,811,265
58 3,811,266
82A 3,811,267

CLASS 59
27 3,811,268
77 3,811,269
86 3,811,270

CLASS 60
39.15 3,811,273
39.32 3,811,274
39.34 3,811,275
39.6 3,811,271
39.65 3,811,276
3,811,277
39.74R 3,811,278
207 3,811,280
413 3,811,281
421 3,811,282
484 3,811,283
518 3,811,272
533 3,811,284
660 3,811,279

CLASS 61
1F 3,811,285
31 3,811,286
38 3,811,287
45D 3,811,288
46 3,811,289
63 3,811,290

CLASS 62
84 3,811,291
183 3,811,292
280 3,811,293
390 3,811,294

CLASS 64
1V 3,811,295

CLASS 65
1 3,811,850
22 3,811,851
3,811,852
23 3,811,853
27 3,811,854
30 3,811,855
48 3,811,856
65R 3,811,857
135 3,811,858
3,811,859
3,811,860
179 3,811,861
280 3,811,862

CLASS 66
8 3,811,296
50R 3,811,297
86 3,811,298
120 3,811,299

CLASS 68
12R 3,811,300

CLASS 70
12 3,811,301
100 3,811,302
237 3,811,303

CLASS 71
92 3,811,863
124 3,811,864

CLASS 72
17 3,811,304
39 3,811,305
126 3,811,306
205 3,811,307
210 3,811,308
235 3,811,309
252 3,811,310
278 3,811,311
3,811,312
430 3,811,313

CLASS 73
6 3,811,314
3,811,315
3,811,316
11 3,811,319
23 3,811,317
40 3,811,318
61R 3,811,320
67.8S 3,811,321
155 3,811,322
3,811,323
231R 3,811,324
421B 3,811,326
425.4P 3,811,325
425.4R 3,811,327
465

CLASS 74
5.41 3,811,329
5.6B 3,811,328
53 3,811,330
230.17A 3,811,331
242.11S 3,811,332
242.15R 3,811,333
251R 3,811,334
409 3,811,335
471XY 3,811,336
477 Re.28,017
492 3,811,337
527 3,811,338
594.4 3,811,339
611 3,811,340
711 3,811,341
750R 3,811,342
759 3,811,343

CLASS 75
3 3,811,865
5 3,811,866
24 3,811,867
42 3,811,868
3,811,869
52 3,811,870
84 3,811,871
122 3,811,872
123K 3,811,873
124 3,811,874
3,811,875
173R 3,811,876
208R 3,811,877
211 3,811,878

CLASS 81
90E 3,811,344

CLASS 82
2B 3,811,345
25 3,811,346

CLASS 83
1 3,811,347
13 3,811,348
14 3,811,349
39 3,811,350
49 3,811,351
54 3,811,352
71 3,811,353
320 3,811,354
520 3,811,355
762 3,811,356

CLASS 84
1.25 3,812,278
327 3,811,357

CLASS 86
20R 3,811,358

CLASS 89
1.87 3,811,360
1.813 3,811,359

CLASS 90
12D 3,811,361

CLASS 91
232 3,811,362
412 3,811,363
422 3,811,364

CLASS 92
63 3,811,365
130 3,811,366
165 3,811,367

CLASS 93
55 3,811,368

CLASS 96
1.3 3,811,883
1.4 3,811,880
1.5 3,811,879
3 3,811,881
13 3,811,882
27R 3,811,884
3,811,885
33 3,811,886
50R 3,811,887
66R 3,811,888
67 3,811,889
74 3,811,890
3,811,891
3,811,892
79 3,811,893
86R 3,811,894
88 3,811,895
100 3,811,896
114 3,811,897

CLASS 98
40D 3,811,369
94 3,811,370
115 3,811,371

CLASS 99
277.1 3,811,372
295 3,811,373
341 3,811,374
425 3,811,375
427 3,811,376

CLASS 101
93C 3,811,377
120 3,811,378

CLASS 102
13 3,811,379
49.7 3,811,380
66 3,811,381

CLASS 104
7R 3,811,382
130 3,811,383
147 3,811,384
167 3,811,385

CLASS 106
38.28 3,811,898
43 3,811,899
50 3,811,901
55 3,811,900
169 3,811,902
187 3,811,903
193J 3,811,904
288B 3,811,905
290 3,811,906
299 3,811,907
300 3,811,908

CLASS 110
182.5 3,811,386

CLASS 111
1 3,811,387
7.1 3,811,388
91 3,811,389

CLASS 112
27 3,811,390
147 3,811,391
168 3,811,392

CLASS 113
120R 3,811,393

CLASS 114
144R 3,811,394
3,811,395
201R 3,811,396

CLASS 115
14 3,811,397
16 3,811,398
39 3,811,399

CLASS 116
70 3,811,400
3,811,401
114.5 3,811,402
125 3,811,403
129R 3,811,404

CLASS 117
8.5 3,811,909
17 3,811,910
33 3,811,911
33.3 3,811,912
34 3,811,913
37LE 3,811,914
45 3,811,915
46CB 3,811,916
47H 3,811,918
47R 3,811,917
62 3,811,919
69 3,811,920
72 3,811,921
76P 3,811,924
76T 3,811,922
3,811,923
93.4R 3,811,925
101 3,811,926
106R 3,811,927
106 3,811,928
107.2R 3,811,929
3,811,930
132B 3,811,931
138.5 3,811,932
155UA 3,811,933
212 3,811,934
215 3,811,935
217 3,811,936
3,811,937
224 3,811,938
227 3,811,939
228 3,811,940
234 3,811,941
235 3,811,942

CLASS 118
2 3,811,405
6 3,811,406
32 3,811,407
73 3,811,408
314 3,811,409

CLASS 119
1 3,811,410
4 3,811,411
53 3,811,412
106 3,811,413

CLASS 122
250R 3,811,414
478 3,811,415

CLASS 123
52M 3,811,416
73A 3,811,417
103R 3,811,418
119R 3,811,419
148E 3,811,420

CLASS 124
1 3,811,421

CLASS 126
263 3,811,422

CLASS 128
1R 3,811,423
3,811,424
1 3,811,425
1.2 3,811,426
2.05D 3,811,427
2.05E 3,811,429
2.05M 3,811,439
2.06F 3,811,428
33 3,811,430

64 3,811,431
66 3,811,432
84C 3,811,433
89R 3,811,434
130 3,811,435
140 3,811,436
152 3,811,437
156 3,811,438
214.4 3,811,440
218DA 3,811,441
218R 3,811,442
235 3,811,443
260 3,811,444
285 3,811,445
303 3,811,446
304 3,811,447
343 3,811,449
349B 3,811,448
349R 3,811,450

CLASS 131

10R 3,811,451
170A 3,811,452

CLASS 132

53 3,811,453

CLASS 135

1R Re.28,012
3,811,454
46T 3,811,455

CLASS 136

6FS 3,811,943
6LF 3,811,947
6R 3,811,944
10 3,811,945
30 3,811,946
83T 3,811,948
86A 3,811,952
86B 3,811,951
86D 3,811,949
86E 3,811,950
89 3,811,953
3,811,954
107 3,811,955
133 3,811,956
146 3,811,957
233 3,811,958

CLASS 137

39 3,811,456
73 3,811,457
106 3,811,458
227 3,811,459
255 3,811,460
318 3,811,461
344 3,811,462
362 3,811,463
414 3,811,464
487.5 3,811,465
493 3,811,466
494 3,811,467
512.15 3,811,468
525.1 3,811,469
540 3,811,470
596.13 3,811,471
625.68 3,811,472
810 3,811,473
833 3,811,474
840 3,811,475
842 3,811,476

CLASS 138

103 3,811,477
154 3,811,478

CLASS 139

124A 3,811,479
384R 3,811,480

CLASS 140

93.2 3,811,481
93.4 3,811,482

CLASS 141

1 3,811,483
7 3,811,484
59 3,811,485
208 3,811,486

CLASS 144

312 3,811,487

CLASS 148

6.15R 3,811,959
11.5F 3,811,960
34 3,811,961
103 3,811,962
172 3,811,963

CLASS 149

19.1 3,811,964
19.2 3,811,965
3,811,966
19.4 3,811,967
19.9 3,811,968
20 3,811,969
36 3,811,970
92 3,811,971
109 3,811,972

CLASS 152

209R 3,811,488

CLASS 156

3 3,811,973
8 3,811,974
13 3,811,975
62.8 3,811,976
108 3,811,977
160 3,811,978
181 3,811,979
245 3,811,983
251 3,811,984
277 3,811,985
308 3,811,980
332 3,811,981
382 3,811,982
494 3,811,986
497 3,811,987
498 3,811,988

CLASS 160

118 3,811,489

CLASS 161

5 3,811,989
12 3,811,990
24 3,811,991
44 3,811,996
68 3,811,997
100 3,811,998
109 3,811,999
114 3,812,001
119 3,812,002
156 3,812,003
173 3,812,004
247 3,812,005
267 3,811,992

CLASS 162

18 3,811,993
19 3,811,994
3,811,995
111 3,812,000
146 3,812,006
343 3,812,007

CLASS 164

49 3,811,490
87 3,811,491
278 3,811,492

CLASS 165

32 3,811,493
65 3,811,494
85 3,811,495
105 3,811,496
157 3,811,497
161 3,811,498

CLASS 166

67 3,811,499
154 3,811,500
252 3,811,501
3,811,502
3,811,503
273 3,811,504
274 3,811,505
3,811,506
3,811,507
288 3,811,508
293 3,811,509
302 3,811,510

CLASS 168

34 3,811,512

CLASS 169

28 3,811,511

CLASS 172

311 3,811,516

CLASS 173

12 3,811,513
65 3,811,514
93 3,811,515
93.7 3,811,517

CLASS 174

38 3,812,279
52S 3,812,280
53 3,812,281
68C 3,812,282
105R 3,812,283
188 3,812,284

CLASS 175

60 3,811,518
73 3,811,519
398 3,811,520

CLASS 176

30 3,812,008

CLASS 177

1 3,811,521
13 3,811,522
180 3,811,523

CLASS 178

5.8 3,812,285
6.8 3,812,286
3,812,287
3,812,288
7.3R 3,812,289
23A 3,812,290

CLASS 179

1GQ 3,812,295
1SA 3,812,291
2DP 3,812,292
7R 3,812,293
15AQ 3,812,294
18AH 3,812,299
18EA 3,812,298
18ES 3,812,297
18B 3,812,296
107R 3,812,300
146R 3,812,301
175.2R 3,812,302
175.3R 3,812,303

CLASS 180

6.2 3,811,524
33A 3,811,528
44M 3,811,525
82R 3,811,526
121 3,811,527

CLASS 181

.5ED 3,811,529
.5VM 3,811,530
50 3,811,531
156 3,811,532

CLASS 182

28 3,811,533
48 3,811,534

CLASS 188

29 3,811,535
32 3,811,536
79.5GE 3,811,538
79.5P 3,811,537
106A 3,811,539
196D 3,811,540
206R 3,811,541
259 3,811,542

CLASS 190

43 3,811,543

CLASS 191

66 3,812,304

CLASS 192

89B 3,811,544
106.1 3,811,545

CLASS 195

29 3,812,009
31F 3,812,010
31R 3,812,011
33 3,812,012
66R 3,812,013
80R 3,812,014
103.5R 3,812,015
139 3,812,016

CLASS 197

18 3,811,546
165 3,811,547

CLASS 198

19 3,811,548
21 3,811,549
131 3,811,554
177 3,811,555
204 3,811,556
230 3,811,557
253 3,811,552
272 3,811,550
283 3,811,553
288 3,811,551

CLASS 200

39R 3,812,306
48A 3,812,309
51R 3,812,310
52R 3,812,307
61.42 3,812,311
61.45R 3,812,308
61.53 3,812,312
86R 3,812,313
144B 3,812,314
284 3,812,305

CLASS 201

17 3,812,017

CLASS 202

230 3,812,018

CLASS 204

15 3,812,019
24 3,812,020
58 3,812,021
3,812,022
3,812,023
67 3,812,024
159.14 3,812,025
270 3,812,026
302 3,812,027

CLASS 206

4 3,811,558
3,811,559
3,811,560
161 3,811,561
317 3,811,562
459 3,811,563
469 3,811,564
478 3,811,565
509 3,811,566

CLASS 208

112 3,812,028
113 3,812,029
340 3,812,030

CLASS 209

73 3,811,567
99 3,811,568
167 3,811,569
399 3,811,570

CLASS 210

30 3,812,031
52 3,812,032
136 3,811,571
152 3,811,572
321 3,811,573

CLASS 211

13 3,811,574
148 3,811,575

CLASS 212

35R 3,811,576
69 3,811,577

CLASS 214

7 3,811,578
38D 3,811,579
55 3,811,580
131A 3,811,581
138 3,811,582
152 3,811,583
3,811,584
3,811,585
305 3,811,586
763 3,811,587

CLASS 215

1C 3,811,588
9 3,811,589
3,811,590
12R 3,811,591
307 3,811,592

CLASS 219

10.55 3,812,315
3,812,316
69P 3,812,317
85 3,812,318
121EB 3,812,319
213 3,812,320
451 3,812,321
532 3,812,322
535 3,812,323
553 3,812,324

CLASS 220

9LG 3,811,593
20 3,811,594
23.4 3,811,595
24A 3,811,596
60R 3,811,597
88R 3,811,598

CLASS 221

265 3,811,599

CLASS 222

70 3,811,600
146HE 3,811,601
178 3,811,602
420 3,811,603
429 3,811,604
472 3,811,605
570 3,811,606

CLASS 223

74 3,811,607
106 3,811,608

CLASS 226

52 3,811,609
171 3,811,610
178 3,811,611
195 3,811,612

CLASS 229

54C 3,811,613

CLASS 233

18 3,811,614

CLASS 235

58P 3,811,615
61.11E 3,812,325
3,812,326
3,812,327
61.12N 3,812,328
92CC 3,812,330
92FL 3,812,329
95R 3,812,331
3,812,332
150.2 3,812,333
151 3,812,334
151.3 3,812,335
153AC 3,812,337
153AM 3,812,336
197 3,812,338

CLASS 238

150 3,811,616

CLASS 239

189 3,811,617
312 3,811,618
428.5 3,811,619
499 3,811,620
520 3,811,621
526 3,811,622

CLASS 240

1.3 3,812,339
2FD 3,812,340
9R 3,812,341
46.01 3,812,342

CLASS 241

1 3,811,623
176 3,811,624
214 3,811,626
281 3,811,627

CLASS 242

4A 3,811,629
7.11 3,811,630
18R 3,811,631
26.1 3,811,628
46.4 3,811,632
54A 3,811,633
55 3,811,634
68.3 3,811,635
75.43 3,811,637
78.6 3,811,638
129.5 3,811,636
129.8 3,811,639
181 3,811,625
191 3,811,640

CLASS 244

1SA 3,811,641
16 3,811,642
137P 3,811,643

CLASS 246

169A 3,812,343
171 3,812,344
249 3,812,345

CLASS 248

56 3,811,644

CLASS 249

68 3,811,645
144 3,811,646
160 3,811,647

CLASS 250

211R 3,812,346
223R 3,812,349
226 3,812,350
231SE 3,812,351
237G 3,812,352
258 3,812,353
281 3,812,354
283 3,812,355
296 3,812,356
332 3,812,357
347 3,812,359
370 3,812,360
3,812,361
3,812,362
385 3,812,358
388 3,812,363
395 3,812,364
396 3,812,365
421 3,812,366
427 3,812,367
432 3,812,368
527 3,812,370
553 3,812,369
557 3,812,371
561 3,812,348
3,812,372
562 3,812,373
568 3,812,347
3,812,374
570 3,812,375
572 3,812,376
578 3,811,648

CLASS 251

8 3,811,649
144 3,811,650
331 3,812,398
335B 3,811,651

CLASS 252

46.7 3,812,033
57 3,812,034
59 3,812,035
3,812,036
62.1 3,812,037
62.2 3,812,038
3,812,039
68 3,812,040
70 3,812,043
89 3,812,041
3,812,044
90 3,812,042
99 3,812,045
106 3,812,046
182 3,812,047
186 3,812,048
301.1R 3,812,050
301.1S 3,812,049
301.2R 3,812,051
3,812,052
3,812,053
3,812,054
313 3,812,055
316 3,812,056
416 3,812,057
458 3,812,058
522 3,812,059
555 3,812,060

CLASS 254

29A 3,811,652
3,811,653
131 3,811,654
161 3,811,655
184 3,811,656
187 3,811,657

CLASS 259

191 3,811,658
193 3,811,659

CLASS 260

2.1E 3,812,061
2.5E 3,812,062
9 3,812,063
18EP 3,812,064
22R 3,812,065
23XA 3,812,066
28.5R 3,812,067
29.2M 3,812,069
29.3 3,812,068
29.4UA 3,812,070
29.6RW 3,812,072
29.6TA 3,812,071
30.4R 3,812,073
31.8M 3,812,074
33.6UA 3,812,075
37AL 3,812,076
37SB 3,812,164
40R 3,812,077
42.29 3,812,078
45.75R 3,812,080
45.8A 3,812,079
46.5R 3,812,081
49 3,812,082
63UY 3,812,083
67R 3,812,084
78R 3,812,085
79.5C 3,812,087
87.1 3,812,086
93.5R 3,812,088
93.7 3,812,089
94.9R 3,812,090
112.5 3,812,091
3,812,092
146R 3,812,093
152 3,812,094
192 3,812,095
210R 3,812,096
3,812,097
211.5R 3,812,098
213 3,812,099
239.1 3,812,100
239.3D 3,812,101
3,812,102
3,812,103
239.55C 3,812,105
239.57 3,812,106
239.6 3,812,104
240D 3,812,111
240G 3,812,107
3,812,110
240J 3,812,112
240R 3,812,109
3,812,113
240.9 3,812,108
243C 3,812,116
243R 3,812,114
3,812,117
247 3,812,119
247.1 3,812,118
249.6 3,812,122
249.8 3,812,120
251A 3,812,121
256.6 3,812,124
268BQ 3,812,127
268PH 3,812,129
268H 3,812,125
3,812,126
268N 3,812,128
281 3,812,130
283S 3,812,131
285 3,812,132
288 3,812,123
289R 3,812,133
293.54 3,812,134
293.55 3,812,135
294.9 3,812,136
296R 3,812,137
304 3,812,138
305 3,812,139
308R 3,812,140
309 3,812,141
3,812,142
309.6 3,812,143
309.7 3,812,144
310A 3,812,145
326.14R 3,812,146

326.15 3,812,150
326.3 3,812,147
326.47 3,812,151
326.5FN 3,812,148
3,812,149
329.3 3,812,152
335 3,812,153
340.3 3,812,154
343.2F 3,812,155
343.2R 3,812,115
345.2 3,812,156
3,812,157
346.1R 3,812,158
346.3 3,812,159
347.3 3,812,160
347.7 3,812,161
347.9 3,812,163
349 3,812,162
397.4 3,812,165
3,812,166
429R 3,812,167
453PC 3,812,169
453R 3,812,168
3,812,209
465C 3,812,171
465D 3,812,170
468D 3,812,172
471C 3,812,173
479C 3,812,174
486AC 3,812,175
494 3,812,176
501.21 3,812,177
512R 3,812,178
514D 3,812,179
515A 3,812,180
520 3,812,181
544M 3,812,184
544Y 3,812,183
553DA 3,812,185
556A 3,812,186
557B 3,812,187
559AT 3,812,188
564R 3,812,189
584R 3,812,182
586A 3,812,190
590 3,812,191
608 3,812,192
620 3,812,193
623R 3,812,194
638R 3,812,210
658R 3,812,211
663 3,812,212
665R 3,812,195
3,812,213
672R 3,812,196
672T 3,812,197
674N 3,812,198
676R 3,812,199
677A 3,812,200
824R 3,812,201
830TW 3,812,214
834 3,812,202
845 3,812,203
878R 3,812,204
3,812,215
885 3,812,205
887 3,812,216
890 3,812,206
897A 3,812,207
899 3,812,208
924 3,812,217
926 3,812,218
936 3,812,219
953 3,812,220
968 3,812,221
970 3,812,222
987 3,812,223

CLASS 261

18B 3,811,660
26 3,811,661
91 3,811,662
151 3,811,663

CLASS 264

6 3,812,226
28 3,812,224
54 3,812,225
3,812,227
3,812,228
60 3,812,229
89 3,812,230
290T 3,812,231

CLASS 267

66 3,811,664
160 3,811,665

CLASS 269

9 3,811,666
23 3,811,667
258 3,811,668

CLASS 270

31 3,811,669

CLASS 271

80 3,811,670

CLASS 272

57F 3,811,671
79R 3,811,672

CLASS 273

9 3,811,673
85E 3,811,674
101 3,811,675
110 3,811,676
118R 3,811,677
126R 3,811,678
131BB 3,811,679
136G 3,811,680
139 3,811,681
155 3,811,682
157R 3,811,683
183B 3,811,684

CLASS 274

9C 3,811,686

--ASS 277

28 3,811,687
39 3,811,688
166 3,811,689
193 3,811,690
224 3,811,691
231 3,811,692

CLASS 279

18 3,811,693
83 3,811,694

CLASS 280

1.192 3,811,695
11.35T 3,811,696
43.18 3,811,697
106R 3,811,698
111 3,811,699
124R 3,811,700
150SB 3,811,702
3,811,703
150B 3,811,701
216 3,811,704
279 3,811,705
407 3,811,706
423R 3,811,707
433 3,811,708

CLASS 285

39 3,811,709
55 3,811,710
110 3,811,711
132 3,811,712
226 3,811,713
229 3,811,714

CLASS 290

4 3,812,377
38 3,812,378
50 3,812,379

CLASS 292

92 3,811,717
241 3,811,718
254 3,811,719

CLASS 294

83R 3,811,720

CLASS 296

23R 3,811,722
26 3,811,723
28R 3,811,721
36 3,811,724
66 3,811,725

CLASS 297

341 3,811,726
385 3,811,727
440 3,811,728

CLASS 298

23M 3,811,729

CLASS 299

8 3,811,730
34 3,811,731

CLASS 301

11R 3,811,732
12R 3,811,733
13SM 3,811,734
13R 3,811,735
3,811,736
63PW 3,811,737

CLASS 303

21BE 3,811,739
22R 3,811,738

CLASS 307

11 3,812,380
133 3,812,382
228 3,812,383
238 3,812,384
243 3,812,385
261 3,812,386
265 3,812,387
291 3,812,388

CLASS 308

10 3,811,740
122 3,811,741
183 3,811,742
187 3,811,743
235 3,811,744

CLASS 310

50 3,812,389
68D 3,812,390
168 3,812,391
259 3,812,392

CLASS 312

13 3,811,745
228 3,811,746
308 3,811,747

CLASS 313

344 3,812,393
467 3,812,394

CLASS 315

3.6 3,812,395
10 3,812,396
31TV 3,812,397

CLASS 317

2F 3,812,399
18D 3,812,400
40R 3,812,401
100 3,812,402
101D 3,812,381
134 3,812,403
234R 3,812,404
235AB 3,812,405
235N 3,812,406
258 3,812,407

CLASS 318

282 3,812,408
310 3,812,409
328 3,812,410
376 3,812,411
577 3,812,412
696 3,812,413
3,812,414

CLASS 320

31 3,812,415

CLASS 321

45R 3,812,416

CLASS 322

55 3,812,417

CLASS 324

.5R 3,812,418
32 3,812,419
52 3,812,420
58.5A 3,812,423
58.5B 3,812,421
3,812,422
61R 3,812,424
71CP 3,812,425
73R 3,812,426
79D 3,812,427
127 3,812,428
166 3,812,429

CLASS 325

4 3,812,430

CLASS 328

137 3,812,431
138 3,812,432
155 3,812,433

CLASS 330

19 3,812,434

CLASS 331

112 3,812,435

CLASS 333

18 3,812,436
81A 3,812,437
97R 3,812,438

CLASS 335

151 3,812,439
167 3,812,440
208 3,812,441

CLASS 336

83 3,812,442
192 3,812,443

CLASS 339

15 3,812,444
32R 3,812,445
41 3,812,446
59R 3,812,447
97C 3,812,448
98 3,812,449
128 3,812,450
155R 3,812,451
258R 3,812,452
266R 3,812,453

CLASS 340

3R 3,812,454
7R 3,812,455
8R 3,812,456
15.5TD 3,812,457
58 3,812,458
46.3MA 3,812,460
146.3F 3,812,459
149A 3,812,461
163 3,812,462
172.5 3,812,463
3,812,464
3,812,465
3,812,466
3,812,467
3,812,468
3,812,469
3,812,470
3,812,471
3,812,472
3,812,473
3,812,474
3,812,475
173LM 3,812,477
173LS 3,812,479
173RC 3,812,476
173R 3,812,478
174TF 3,812,480
196 3,812,481
237R 3,812,482
258C 3,812,484
258R 3,812,483
324AD 3,812,487
3,812,488
3,812,491
324A 3,812,485
324M 3,812,486
324R 3,812,489
3,812,490
409 3,812,492

CLASS 343

12R 3,812,493
852 3,812,494

CLASS 346

101 3,812,495
108 3,812,496

CLASS 350

7 3,811,748
55 3,811,749
117 3,811,750
160LC 3,811,751
164 3,811,752
175NG 3,811,753
189 3,811,754
289 3,811,755

CLASS 351

17 3,811,756
90 3,811,757

CLASS 352

72 3,811,758
79 3,811,759
157 3,811,760
166 3,811,761

CLASS 353

26 3,811,762
77 3,811,763

CLASS 354

28 3,812,497
29 3,812,498
31 3,812,499
32 3,812,500
44 3,812,501
51 3,812,502
60 3,812,503
3,812,504
62 3,812,505
80 3,812,506
104 3,812,507
106 3,812,508
195 3,812,509
235 3,812,510
258 3,812,511
3,812,512
263 3,812,513
317 3,812,514
319 3,812,515

CLASS 355

3P 3,811,764
3R 3,811,765
3 3,811,766
27 3,811,767
29 3,811,768
45 3,811,769
65 Re.28,016
67 3,811,770
100 3,811,771
111 3,811,772
132 3,811,773

CLASS 356

5 3,811,774
35 3,811,775
51 3,811,776
73 3,811,777
85 3,811,778
172 3,811,779
180 3,811,780
188 3,811,781
201 3,811,782

CLASS 357

16 3,812,516
23 3,812,517
30 3,812,518
38 3,812,519
41 3,812,520
48 3,812,521

CLASS 358

1 3,812,522
4 3,812,523
28 3,812,524
38 3,812,525
42 3,812,526
47 3,812,527
49 3,812,528

CLASS 360

5 3,812,530
25 3,812,529
26 3,812,531
72 3,812,532
77 3,812,533
92 3,811,685
98 3,812,534
103 3,812,535
122 3,812,536
132 3,812,537
134 3,812,538

CLASS 401

9 3,811,783

CLASS 403

2 3,811,784
93 3,811,715
204 3,811,716
255 3,811,785
300 3,811,786

CLASS 404

84 3,811,787

CLASS 408

72 3,811,788

CLASS 415

1 3,811,789
145 3,811,790

CLASS 416

129 3,811,791

CLASS 417

28 3,811,792
40 3,811,793
49 3,811,794
53 3,811,795
64 3,811,796
199A 3,811,797
221 3,811,799
269 3,811,798
317 3,811,800
454 3,811,801
3,811,802
458 3,811,803

CLASS 418

32 3,811,804
88 3,811,805
100 3,811,806
227 3,811,807

CLASS 423

21 3,812,232
3,812,233
61 3,812,234
158 3,812,235
237 3,812,236
266 3,812,237
283 3,812,238
440 3,812,239
448 3,812,240
495 3,812,241
530 3,812,242
574 3,812,243
645 3,812,244

CLASS 424

1 3,812,245
3,812,264
59 3,812,246
62 3,812,247
78 3,812,248
121 3,812,249
148 3,812,250
3,812,251
180 3,812,252
200 3,812,253
226 3,812,254
244 3,812,255
250 3,812,256
251 3,812,257
267 3,812,258
269 3,812,259
273 3,812,260
278 3,812,261
282 3,812,262
3,812,263
322 3,812,265

CLASS 425

167 3,811,808
173 3,811,809
185 3,811,810
192 3,811,811
217 3,811,812
252 3,811,813
385 3,811,814
446 3,811,815

CLASS 426

52 3,812,266
104 3,812,267
146 3,812,268
227 3,812,269
231 3,812,270
312 3,812,271
380 3,812,272
433 3,812,273
438 3,812,274

CLASS 431

22 Re.28,013
75 3,811,816
126 3,811,817
168 3,811,818
255 3,811,819
354 3,811,820

CLASS 432

8 3,811,821
13 3,811,822
80 3,811,823
3,811,824
122 3,811,825
200 3,811,826
221 3,811,827
227 3,811,828
253 3,811,829

CLASSIFICATION OF DESIGNS

D2—	431	231,666	D7—	188	231,669		91	231,672	D23—	58	231,675	D34—	5K	231,678	D56—	4R	231,681
D6—	31	231,667	D9—	224	231,670		141	231,673	D24—	1B	231,676	D48—	4B	231,679	D87—	1	231,682
	167	231,668	D12—	1	231,671	D22—	7	231,674	D30—	8	231,677		31	231,680			

CLASSIFICATION OF PLANTS

P. —	22	3,555	P. —	50	3,551	P. —	70	3,554	P. —	75	3,552	P. —	78	3,553			

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

3,811,433
1 : 3,811,280
3,811,328
3,811,360
3,811,449
3,811,774
3,811,964
3,811,965
3,811,966
3,811,968
3,812,494
4 : 3,811,139
3,811,224
3,811,271
3,811,301
3,811,518
3,811,569
3,811,574
3,811,606
3,811,690
3,811,771
3,811,829
3,812,272
3,812,387
3,812,405
3,812,521
6 : 3,811,130
3,811,131
3,811,133
3,811,143
3,811,146
3,811,163
3,811,167
3,811,180
3,811,192
3,811,214
3,811,225
3,811,253
3,811,295
3,811,319
3,811,320
3,811,325
3,811,335
3,811,358
3,811,381
3,811,413
3,811,423
3,811,424
3,811,443
3,811,444
3,811,447
3,811,462
3,811,466
3,811,467
3,811,473
3,811,499
3,811,522
3,811,526
3,811,554
3,811,558
3,811,561
3,811,584
3,811,591
3,811,596
3,811,618
3,811,623
3,811,625
3,811,633
3,811,648
3,811,654
3,811,672
3,811,679
3,811,681
3,811,685
3,811,722
3,811,741
3,811,742
3,811,748
3,811,751
3,811,765
3,811,778
3,811,780
3,811,798
3,811,800
3,811,804
3,811,827
3,811,851
3,811,856
3,811,900
3,811,904
3,811,967
3,811,974
3,811,977
3,812,024
3,812,082
3,812,083
3,812,098
3,812,117
3,812,159
3,812,160
3,812,162
3,812,174
3,812,176
3,812,209
3,812,238
3,812,265
3,812,274
3,812,286
3,812,292
3,812,308
3,812,311
3,812,324
3,812,330
3,812,354
3,812,359
3,812,366
3,812,395
3,812,403
3,812,421
3,812,451
3,812,454
3,812,468
3,812,469
3,812,477
3,812,496
3,812,505
3,812,509
3,812,527
3,812,532
3,812,533
3,812,535
8 : 3,811,206
3,811,641
3,812,298
3,812,429
3,812,531
9 : 3,811,168
3,811,249
3,811,273
3,811,274
3,811,277
3,811,329
3,811,334
3,811,355
3,811,407
3,811,442
3,811,529
3,811,671
3,811,717
3,811,782
3,811,805
3,811,830
3,811,857
3,811,874
3,811,879
3,811,901
3,811,920
3,811,930
3,811,940
3,811,950
3,811,951
3,811,953
3,811,983
3,812,080
3,812,084
3,812,127
3,812,137
3,812,169
3,812,295
3,812,328
3,812,349
3,812,367
3,812,389
10 : 3,811,833
3,811,848
3,811,902
3,811,906
3,811,942
3,812,040
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DESIGN PATENTS

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PLANT PATENTS

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*